IAS | INSTITUTE FOR ADVANCED STUDY

Faculty and Members
2022–2023

The Institute is pledged to assemble a group of scientists and scholars who with their pupils and assistants may devote themselves to the task of pushing beyond the present limits of human knowledge and to training those who may "carry on" in this sense.

—*Mission statement of the Institute for Advanced Study by founding Director Abraham Flexner, Organization Meeting, October 10, 1930*

It is fundamental in our purpose, and our express desire, that in the appointments to the staff and faculty as well as in the admission of workers and students, no account shall be taken, directly or indirectly, of race, religion, or sex. We feel strongly that the spirit characteristic of America at its noblest, above all the pursuit of higher learning, cannot admit of any conditions as to personnel other than those designed to promote the objects for which this institution is established, and particularly with no regard whatever to accidents of race, creed, or sex.

—*Louis Bamberger and Caroline Bamberger Fuld, in a letter dated June 4, 1930, to the Institute's first Board of Trustees*

Contents

Information contained herein is current as of October 28, 2022

Introduction

THE INSTITUTE FOR ADVANCED STUDY is an international center for theoretical research and intellectual inquiry that provides an exceptional environment for the acceleration of ideas and knowledge. It creates time and space for solitary work as well as dialogue among some 250 researchers selected and mentored each year from more than 100 institutions around the world and at various stages in their careers by a permanent Faculty, each of whom are preeminent leaders in their fields. From postdocs with new perspectives and tools, to established experts who create and advance fields of inquiry, the Institute's focused yet freely inquisitive atmosphere enables advancement in unforeseeable ways, leading to societal innovation and new understanding.

Research spans four Schools—Historical Studies, Mathematics, Natural Sciences, Social Science—and is focused on long-term and fundamental outcomes, with no concern for immediate application but rather revolutionary and sustained impact. IAS is a scholar's paradise—a campus of unparalleled energy and curiosity, free of external pressures and academic restraints, where exceptional minds have boundless opportunity to explore what is not yet known. Thirty-five Nobel Laureates, forty-four of the sixty-two Fields Medalists, and twenty-two of the twenty-five Abel Prize Laureates, as well as many winners of the Wolf and MacArthur prizes, have been affiliated with the Institute.

At the Institute, everything is designed to encourage scholars to take their research to the next level. Members carry out their work in a setting where human scale has been carefully maintained to encourage the sharing of ideas, serendipitous interaction, and friendship.

Located in Princeton, New Jersey, the Institute was founded in 1930 with the motto "Truth and Beauty." It is an independent educational institution that charges no tuition and relies on charitable contributions and grants for its operation. Brother-and-sister philanthropists Louis Bamberger and Caroline Bamberger Fuld established the Institute in the vision of founding Director Abraham Flexner.

Long and complex chains of knowledge have developed in numerous and astounding ways through research originating at the Institute—from the development of programmable computers and the uncovering of deep symmetries of nature to advances in societal understanding and historical practice. Current research at IAS involves pursuing a theory of everything that governs the smallest and largest phenomena in our universe, a unified framework pursued by IAS founding Professor Albert Einstein, father of the theory of relativity; using computational tools, models, and simulations to determine

the origins and long-term fate of the universe; establishing the theoretical foundations of machine learning; reconstructing history through textual and material evidence, utilizing digital resources, climate data, and genetic information; examining facets of society previously overlooked or hidden, such as racial formation and social citizenship and emerging scientific and technological phenomena; and developing a critical anthropology of politics and morality.

Albert Einstein, Kurt Gödel, Hetty Goldman, George F. Kennan, Erwin Panofsky, John von Neumann, and Hermann Weyl were among the first in a long line of distinguished Institute scientists and scholars to produce a deeper understanding of the physical world and of humanity. Flexner's vision has been maintained by his successors as Director: Frank Aydelotte, J. Robert Oppenheimer, Carl Kaysen, Harry Woolf, Marvin L. Goldberger, Phillip A. Griffiths, Peter Goddard, and Robbert Dijkgraaf. In February 2022, David Nirenberg became the Institute's tenth Director.

David Nirenberg
Director and Leon Levy Professor
David Nirenberg is a historian and author, recognized for wide-ranging scholarship on the interaction of Christians, Jews, and Muslims. His research provides insight into questions of racism, Anti-Semitism, and Christian-Muslim relations. At the University of Chicago, Nirenberg served as founding director of the Neubauer Collegium for Culture and Society, Dean of the Social Sciences, Executive Vice Provost, and Interim Dean of the Divinity School. Nirenberg is a member of the American Academy of Arts and Sciences and Medieval Academy of America. His most recent book, co-authored with his father (Ricardo Nirenberg) is *Uncountable: A Philosophical History of Number and Humanity from Antiquity to the Present*, which seeks to understand the powers and limits of the sciences and the humanities. He is currently at work on a history of racial thought in Judaism, Christianity and Islam.

School of Historical Studies

Administrative Officer: Danette Rivera

THE SCHOOL OF HISTORICAL STUDIES was established in 1949 with the merging of the School of Economics and Politics and the School of Humanistic Studies. It bears no resemblance to a traditional academic history department as it brings together disciplines that are normally isolated in separate departments in traditional research universities. The School supports all inquiry for which historical methods and approaches are appropriate throughout the humanistic disciplines, from socioeconomic developments, political theory, and modern international relations, to the history of art, science, philosophy, music, and literature. In geographical terms, the School concentrates primarily on the history of Western, Near Eastern, and Asian civilizations, with emphasis on Greek and Roman civilization, the history of Europe (medieval, early modern, and modern), the Islamic world, and East Asia, but it also promotes research in areas beyond the scholarly interests of its Faculty. The School has supported scholars whose work focuses on other regions, including Central Asia, India, Africa, and the Americas.

The Members of the School represent a variety of nationalities and career stages, with a continually increasing number of young researchers and scholars from less privileged countries. The Faculty and Members of the School do not adhere to any one point of view but practice a range of methods of inquiry and scholarly styles, both traditional and innovative, ranging from the edition of texts and the analysis of images to cooperations with the social and natural sciences. Uniquely positioned to sponsor work that crosses conventional departmental and professional boundaries, the School actively promotes interdisciplinary research and cross-fertilization of ideas. It thereby supports research that often is not possible in other academic environments and encourages the creation of new historical enterprises.

Suzanne Conklin Akbari

Professor · Medieval Studies

Suzanne Conklin Akbari has expanded the range and methods of exploring texts from the Middle Ages, pushing the boundaries of traditional readings and exploring shared histories. Her research has traced the evolving relationship between sight and knowledge as manifested in a range of poetic texts, explored the relationship between Islam and Christianity, challenged the notion of medieval European literature's insularity, and highlighted the influence of Arabic poetry, music, and philosophy. She is currently working on a survey of metaphor and metamorphosis as they were understood in England and France circa 1400, and an examination of how premodern people saw themselves situated in history.

Angelos Chaniotis

Professor · Ancient History and Classics

Angelos Chaniotis is engaged in wide-ranging research in the social, cultural, religious, legal, and economic history of the Hellenistic world and the Roman East. The author of many books and articles and senior editor of the *Supplementum Epigraphicum Graecum*, he has worked on war, religion, communicative aspects of rituals, and strategies of persuasion in the ancient world. His current research focuses on emotions, memory, identity, the history of the night, and the history of Aphrodisias (Asia Minor). He is the co-director of the archaeological excavation of Lyktos on Crete.

Nicola Di Cosmo

Luce Foundation Professor in East Asian Studies · East Asian Studies

Nicola Di Cosmo's main field of research is the history of the relations between China and Inner Asia from pre-history to the modern period. Within that broad area, he has published on the early history of China's relations with steppe nomads (e.g., *Ancient China and Its Enemies: The Rise of Nomadic Powers in East Asian History*, 2002) and on Mongol and Manchu history (e.g., *Manchu-Mongol Relations on the Eve of the Qing Conquest*, 2003), and he has edited several books, including *The Cambridge History of Inner Asia* (2009). His most recent works explore the use of proxy data from climatology and other palaeosciences in the study of the history of China and Central Asia, with special reference to early Eurasian nomads, the Mongol empire, and the Qing dynasty.

SCHOOL OF HISTORICAL STUDIES

Myles W. Jackson

Albers-Schönberg Professor in the History of Science · History of Science

Myles W. Jackson explores the intersections between science, technology, aesthetics, history, and society. The breadth of Jackson's research extends from the artisanal production of scientific knowledge in nineteenth-century Germany to molecular biology and physics, intellectual property and privacy issues, knowledge sharing, race and genomics, bioengineering, and the interactions between musicians, natural scientists, and radio engineers. His scholarship is noted for its cross-disciplinary methodology which interweaves economic, commercial, and scientific insights, pushing the boundaries of the field to establish fresh lines of inquiry.

Sabine Schmidtke

Professor · Islamic Intellectual History

Sabine Schmidtke is a scholar of Islamic intellectual history whose pioneering research has transformed perspectives on the interrelations and connections among different strands of intellectual inquiry—across time, place, religions, and philosophical schools. Schmidtke is currently working on the history of Islamic thought in the post-classical period (thirteenth to nineteenth century), with a focus on reconstructing the textual heritage and the intellectual import of the Islamic intellectual world, from Iran and Central Asia to Turkey and Yemen. She is also engaged in a comprehensive study of the Muslim reception of the Bible, a topic on which she has published extensively over the past years.

Francesca Trivellato

*Andrew W. Mellon Professor* · Early Modern Europe

A leading historian of early modern Italy and continental Europe, Francesca Trivellato has made significant and groundbreaking contributions to our understanding of the organization and culture of the marketplace in the pre-industrial world. Trivellato's original and imaginative research has revitalized the study of early economic history, and her influential work on cross-cultural trade intersects the fields of European, Jewish, Mediterranean, and global history, religion, and capitalism.

Yve-Alain Bois

Professor Emeritus · Art History

A specialist in twentieth-century European and American art, Bois is recognized as an expert on a wide range of artists, from Henri Matisse and Pablo Picasso to Piet Mondrian, Barnett Newman, and Ellsworth Kelly. Bois is currently working on several long-term projects, foremost among them the five-volume catalogue raisonné of Ellsworth Kelly's paintings and sculptures, the second of which was published in 2021.
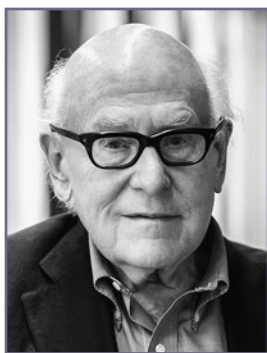
Glen W. Bowersock

Professor Emeritus · Ancient History

Glen W. Bowersock is an authority on Greek, Roman, and Near Eastern history and culture as well as the classical tradition in modern literature. He uses his exceptional knowledge of classical texts in many languages, together with inscriptions, coins, mosaics, and archaeological remains, to illuminate the mingling of different cultures and to draw unexpected and revelatory conclusions. His research interests include the Greek East in the Roman Empire and late antiquity as well as pre-Islamic Arabia.

Caroline Walker Bynum

Professor Emerita · European Medieval History

Caroline Walker Bynum's work has been instrumental in introducing the concept of gender into the study of medieval Christianity. Her path-breaking books have created the paradigm for the study of women's piety that dominates the field today and helped propel the history of the body into a major area of premodern European Studies, and several of her essays are widely cited in discussions of historical method. Her work in *Christian Materiality* (2011) and *Dissimilar Similitudes* (2020) is a radical reinterpretation of the nature of Christianity on the eve of the reformations of the sixteenth century and an exploration of theoretical problems concerning questions of historical comparison. She is currently continuing to work on Christian devotional objects in comparative perspective.

SCHOOL OF HISTORICAL STUDIES

Patrick J. Geary

Professor Emeritus · Medieval History

Patrick J. Geary's work extends over a vast range of topics in medieval history, both chronologically and conceptually —from religiosity and social memory, to language, ethnicity, social structure, and political organization. He has directed the St. Gall Plan Project, an internet-based initiative funded by the Andrew W. Mellon Foundation that provides tools for the study of Carolingian monasticism. Currently, Geary is leading a major project that studies the migration of European societies north and south of the Alps through the analysis of ancient DNA in Longobard-era cemeteries in Hungary and in Italy. He is Co-Principal Investigator of a European Research Council Synergy Grant project integrating genetic, archaeological, and historical perspectives on Eastern Central Europe in order to understand the impact of migrations and mobility on the population of the Carpathian Basin from 400–900 C.E.

Jonathan Israel

Professor Emeritus · Modern European History

Jonathan Israel's work is concerned with European and European colonial history from the Renaissance to the eighteenth century. His recent work focuses on the impact of radical thought (especially Spinoza, Bayle, Diderot, and the eighteenth-century French materialists) on the Enlightenment and on the emergence of modern ideas of democracy, equality, toleration, freedom of the press, and individual freedom.

Heinrich von Staden

Professor Emeritus · Classics and History of Science

Heinrich von Staden has written on a variety of topics in ancient science, medicine, philosophy, and literary theory, from the fifth century B.C. to the fifth century A.D. Drawing on a wide range of scientific, philosophical, and religious sources, he has contributed to the transformation of the history of ancient science and medicine, particularly of the Hellenistic period. His book *Herophilus: The Art of Medicine in Early Alexandria* (1989) is a major contribution to the history of Greek intellectual discourse. His current projects include a book on Erasistratus (one of the two early pioneers of human dissection), a study of the role of animals in ancient scientific theories and practices, and further work on the "semantics of matter" in ancient science.

Hassan Farhang Ansari

Islamic Law and Theology · Institute for Advanced Study · *vp*

Hassan Farhang Ansari focuses on the study of Islamic theology, philosophy, law, and legal theory.

Kyoungjin Bae

History of Early Modern China · Kenyon College · *f*
The Andrew W. Mellon Foundation Fellowship for Assistant Professors

Kyoungjin Bae is interested in early modern Chinese craft, technology, and material culture. While at IAS, she will work on her book manuscript that examines the knowledge and migration of Cantonese woodworkers, as well as the trade and use of tropical woods imported from South Asia during the eighteenth and nineteenth centuries.

Emily Baum

History of China, History of Medicine · University of California, Irvine
George F. Kennan Member

Emily Baum is interested in the history of Chinese medicine, alternative medicine, and popular beliefs and superstitions. While at IAS, she will be writing a book on the history of acupuncture, its global circulations between China and the United States, and its genesis as a type of complementary/alternative medical practice.

Elizabeth B. Bearden

Renaissance Studies, Disability Studies · University of Wisconsin–Madison
Funding provided by the Fund for Historical Studies; Felix Gilbert Member

During her time at IAS, Elizabeth B. Bearden will work on her third monograph, "Crip Authority: Disability and the Art of Consolation in the Renaissance."

Rebecca Benefiel

Classics, Roman Archaeology, Epigraphy · Washington and Lee University
Friends of the Institute for Advanced Study Member

Rebecca Benefiel is a cultural historian of the Roman Empire. While at IAS, she will be working on a book about the widespread popularity of writing in first century Pompeii. Her work highlights the relationship between written text and the spatial and social environments of the Roman world.

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vp Visiting Professor · *ra* Research Associate

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Joel Blecher

Islamic History, History of Capitalism · The George Washington University · *s*
Elizabeth and J. Richardson Dilworth Fellow

Joel Blecher is a scholar of Islamic history and Islamic thought. At IAS, he will be writing a new history of the transoceanic spice routes of the thirteenth to sixteenth centuries, and will explore how Islamic visions of a moral economy came to dominate the ethics of world trade prior to the rise of modern capitalism.

Susanne Bobzien

Philosophy · University of Oxford
Funding provided by the Hetty Goldman Membership Fund and the Fund for Historical Studies

While at IAS, Susanne Bobzien aims to complete her research for a monograph on the development of hypothetical syllogisms in the Aristotelian tradition from Aristotle to Al-Farabi.

Christopher Bonura

Medieval Mediterranean and Global Middle Ages
Funding provided by the Fund for Historical Studies and the Herodotus Fund

Christopher Bonura's research focuses on the Eastern Mediterranean, Byzantium, and Near East, and their global connections. His interests include ancient and medieval notions of time, teleology, eschatology, and imperial ideology. His project explores the late antique Syriac origins and medieval reception of the Apocalypse of Pseudo-Methodius.

Rosie Bsheer

History · Harvard University · *f*

Rosie Bsheer is a cultural, social, and urban historian of the modern Middle East.

Cemil Bülbül

Ancient History · *v*

Cemil Bülbül studies the ancient Near East region, including ancient Mesopotamia. Bülbül generally focuses on Semitic tribes, with published research on Akkadian, Amorites, and Aramean migrations. In recent work, Bülbül examined all the migration movements that took place in the ancient ages in connection with these migrations.

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vp Visiting Professor · *ra* Research Associate

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Pınar Bülbül

Anatolian History · Kahramanmaraş Sütçü İmam Üniversitesi · *v*

Pınar Bülbül studies the ancient Anatolian region, including ancient Anatolian cultural history. Generally, she focuses on ancient Anatolian and Mesopotamian laws and their comparison with today's modern laws.

Ilaria Bultrighini

Ancient History, Epigraphy · University College London · *s*
Funding provided by the Fund for Historical Studies

Ilaria Bultrighini's research interests include the Athenian polis and her non-urban territory, Greek and Roman calendars, time and chronology, and the Greek East under Roman rule. Her project at IAS explores religious connections between Attica and the Mediterranean world from archaic to Roman imperial times.

Howard Chiang

History of Science · University of California, Davis · *f*
Funding provided by the Fund for Historical Studies

While at IAS, Howard Chiang will be working on his book project "Mind Hunters," a history of psychoanalysis and transcultural reasoning across the Sinophone Pacific.

Joan Breton Connelly

Classical Archaeology · New York University · *s*
Funding provided by The Andrew W. Mellon Foundation

Joan Breton Connelly's project is the publication of excavations on Yeronisos Island, Cyprus, tracking human activity from Early Chalcolithic to Byzantine times, especially the response of Cypriot populations to the imperial ambitions of Ptolemaic Egypt and Justinian's administration at Constantinople.

Esther Liberman Cuenca

Urban History, Legal History, Medievalism · University of Houston–Victoria
The Andrew W. Mellon Foundation Fellowship for Assistant Professors

Esther Liberman Cuenca is writing a book on urban identity and the development of customary law from the twelfth to the sixteenth centuries. Her work uncovers the origins of bourgeois status in medieval England and how administrators articulated the 'common good' in towns. She is also editing a teaching text on medieval culture in cinema.

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vp Visiting Professor · *ra* Research Associate

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Anne Dunlop

History of Art · The University of Melbourne
Funding provided by the Fund for Historical Studies

Anne Dunlop is interested in Italian and European medieval and early modern art, materials and technologies of art-making, and cross-cultural artistic exchange. At IAS, she is studying links between Italy and Mongol Eurasia.

Patrick J. Finglass

Classical Studies · University of Bristol · *f*
Elizabeth and J. Richardson Dilworth Fellow; Funding provided by the Fund for Historical Studies

Patrick J. Finglass is working on a new critical edition of the two great poets from archaic Lesbos, Sappho, and Alcaeus. Based on a complete reassessment of all available manuscript evidence, it will pay close attention to the ancient editions of these two poets, and to their impact on ancient Greek and Roman literature and culture.

Yulia Frumer

History of Science and Technology · Johns Hopkins University
Founders' Circle Member, in recognition of Deborah Lunder and Alan Ezekowitz

Yulia Frumer's research explores the ways emotions affect technological decision-making. Focusing on the history of Japanese robotics, she argues that emotional reactions to technology are rooted in a series of historically situated associations that tacitly carry emotional valences.

Vincent Gayon

International Sociological History · Université Paris–Dauphine
Funding provided by the Florence Gould Foundation Fund

While at IAS, Vincent Gayon will research on international monetary cooperation after the Second World War in Europe before the return to convertibility.

Paul R. Goldin

Chinese History and Philosophy · University of Pennsylvania
Funding provided by the Fund for Historical Studies; Roger E. Covey Member in East Asian Studies

Paul R. Goldin is interested in classical Chinese history and philosophy. As the study of this period is necessarily interdisciplinary, Goldin's work also involves archaeology, art history, linguistics, literature, and religion. Goldin's goal at IAS is to finish a book manuscript on classical Chinese aesthetics.

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Jeffrey L. Gould

Modern History, Latin America · Indiana University · *dvp*

Jeffrey L. Gould's work primarily focuses on Central American social movements, ethnic conflicts, and political violence. He is currently working on a book of case studies of "minor utopias" in Latin America, when workers or peasants gained collective control over their work environments during historical moments of social struggle. He has also directed and produced documentary films, and is currently working on a historical film project.

Simcha Gross

Ancient History, Late Antiquity, Frontiers · University of Pennsylvania
The Andrew W. Mellon Foundation Fellowship for Assistant Professors

Simcha Gross is interested in communities in the Near East over the first millennium C.E., and especially their Roman, Persian, and Islamic contexts. This year he will work on the Roman–Persian frontier, showing how the empires were dependent on local inhabitants, creating unique dynamics that shaped individuals, communities, and empires.

Charles George Häberl

Linguistics and History of Religions · Rutgers, The State University of New Jersey · *f*
Funding provided by the Fund for Historical Studies; Willis F. Doney Member

Charles George Häberl is a linguist and historian of religions. His research focuses on Aramaic languages and literatures, chiefly those of the Mandaean community formerly of Iraq and Iran. His engagement with that community began in 1998. His latest book is a translation of and commentary on the Mandaean Book of Kings.

Evan Haefeli

History of Religion, Atlantic World · Texas A&M University · *s*
Funding provided by The Gladys Krieble Delmas Foundation

Evan Haefeli is interested in the religious consequences of European overseas expansion during the early modern era, and the relationship between religious toleration and empire. During his time at IAS, Haefeli will be working on a book analyzing toleration in the British empire between 1660 and 1776.

Bruce Stewart Hall

History of Africa · University of California, Berkeley
Hans Kohn Member

Bruce Stewart Hall is a historian who studies the intellectual and social history of a region of West Africa called the Sahel, which straddles the southern edge of the Sahara Desert. He will be working on a project focused on a social and cultural history of the famously-remote town of Timbuktu in modern-day Mali between 1846 and 1918.

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Yasmin Annabel Haskell

Neo-Latin, History of Emotion, Jesuits · University of Western Australia
Funding provided by the Fund for Historical Studies; Martin L. and Sarah F. Leibowitz Member

Yasmin Annabel Haskell is a Neo-Latinist and historian of emotion. At IAS, she will pursue projects in the history of classical pedagogy in comparative perspective and "Latin emotions" during the long suppression of the Society of Jesus. She will focus on the poetic oeuvre of former Jesuit Emmanuel de Azevedo, who was exiled in the Veneto.

Guy Hedreen

Art, Literature and Culture of Ancient Greece · Williams College · *f*
Funding provided by The Andrew W. Mellon Foundation Fund

Guy Hedreen is working on a book, "Art, Natural History, and Aesthetic Theory: The Fictional Monster and the Origin of Species in Antiquity and Its Early Modern Reception." The book explores responses to Empedokles' theory of the origin of species in art and aesthetic theory in antiquity and the Renaissance.

Christopher P. Jones

Classical Philology and History · Harvard University · *ra*

Christopher P. Jones is interested in Greek and Latin authors, especially of the period 1–300 C.E., Greek and Roman history of the same period, and Greek epigraphy.

Elizabeth Kassler-Taub

History of Architecture · Dartmouth College · *s*
Funding provided by the Herodotus Fund

Elizabeth Kassler-Taub specializes in early modern architecture in its global context, with a focus on Spanish colonialism in southern Italy. At the IAS, she will be at work on her book "Elastic Empire: Architecture, Urbanism, and Identity in Early Modern Palermo," an architectural and urban history of the Sicilian capital.

Juliette Kennedy

Foundations of Mathematics · University of Helsinki · *v/f*

While at IAS, Juliette Kennedy will research the material in the Gödel archive on the history of forcing. Additionally, she will continue work on strong logics and extended constructibility in set theory.

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George A. Kiraz

Ottoman History of Religious Minorities, Syriac Studies · Beth Mardutho: The Syriac Institute · *ra*

George A. Kiraz is working on Ottoman Garshuni documents from the Mardin Patriarchal Archive dating to the late nineteenth century. These are documentary petitions addressed to the Syriac Orthodox Patriarchs who resided in Deir al-Zaʿfarān (Monastery of the Saffron).

Thiago Nascimento Krause

Early Modern History, Brazil in the World · Federal University of the State of Rio de Janeiro
Funding provided by the Herodotus Fund

Thiago Nascimento Krause is researching the global history of Salvador da Bahia, Brazil's first capital, from 1549 to 1763. The book project is coauthored with Christopher Ebert (Brooklyn College, CUNY) and focuses on commodity chains, slavery, and trans-imperial connections to examine the making of early capitalism from a Global South perspective.

Verena Krebs

Medieval History, Ethiopian History · Ruhr-Universität Bochum
Gerda Henkel Stiftung Member

Verena Krebs is a historian who draws on material culture and written sources to investigate the complex relationship between the Christian kingdom of Solomonic Ethiopia and Western Christendom in the late Middle Ages. At IAS, she will work on her book "Africa Collecting Europe: Patronage and Power in Christian Ethiopia, 1468–1530."

Derek Krueger

Religion in Late Antiquity and Byzantium · The University of North Carolina at Greensboro
George William Cottrell, Jr. Member; Funding provided by the Fund for Historical Studies

Derek Krueger studies Christian practices in the medieval Eastern Mediterranean. His current project explores the place of desire in Byzantine monastic culture. He seeks to understand homoerotic longing for God in the works of Symeon the New Theologian (949–1022) within the context of pervasive medieval Orthodox homophobia.

Ewa Lajer-Burcharth

History of Art · Harvard University
Funding provided by the Fund for Historical Studies and the Ruth Stanton Foundation Fund

Ewa Lajer-Burcharth specializes in modern and contemporary art. Her research interests include art and politics, gender, artistic individuality, interiors and interiority, and the art of the Enlightenment. At IAS, she will be working on the transformation of drawing in the eighteenth century, focusing on the relation between the medium and the emergent science of botany.

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Christopher Lakey

History of Art, Medieval Studies · Independent Scholar · *f*
Funding provided by the Fund for Historical Studies; William D. Loughlin Member

Christopher Lakey's primary research explores the intersections between monumental art in the Middle Ages and early modern period and the history of science.

Georg Leube

Islamic Studies · Universität Bayreuth
Funding provided by the Fund for Historical Studies and the Alexander von Humboldt Foundation

Georg Leube's research interest is in Islamicate cultural history. At IAS, he will work on an edition with critical commentary of the corpus of monumental inscriptions affiliated with the Qaraquyunlu and Aqquyunlu "Turkmen" courts in the fifteenth century C.E. Middle East.

Ari Daniel Levine

Chinese History, History of Knowledge · University of Georgia
Funding provided by the Fund for Historical Studies; Starr Foundation East Asian Studies Member

Ari Daniel Levine is a specialist in the intellectual and cultural history of middle-period China. While at IAS, he will be researching and writing a monograph that reconstructs how eleventh-century Chinese literati comprehended vision and visuality across a wide range of textual genres and knowledge systems.

Sara Lipton

History of Religion, Cultural History · Stony Brook University, The State University of New York · *f*
Elizabeth and J. Richardson Dilworth Fellow

While at IAS, Sara Lipton will be working on a book project entitled "How Pictures Hate: The Sources, Mechanisms, and Effects of Inflammatory Images." It aims to analyze and historicize the power and danger of incendiary imagery in specific charged contexts from medieval Europe through the early modern period, and up to our own day.

Manling Luo

Premodern Chinese Literature and Culture · Indiana University · *s*
Starr Foundation East Asian Studies Member

Manling Luo is interested in exploring intersections among literature, culture, and history. At IAS, she will be working on a monograph that examines what she terms the culture of informal storytelling, including the beliefs and mechanisms driving the exchange of stories, in seventh- to tenth-century China.

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Uri Melammed

Yemenite Jewry, Semitic Languages · The Hebrew University · *s*
Patricia Crone Member
Uri Melammed is researching the protocols of the Jewish courts of San'a, Yemen.

Emily Mokros

Chinese History · University of Kentucky · *s*
Funding provided by the Herodotus Fund
While at IAS, Emily Mokros will work on a book about economic, resource, and security crises in Beijing and China's northern capital region during the wartime decade of 1850–1860.

Melissa Moreton

History of the Book, Global Middle Ages · *ra*
Melissa Moreton is a codicologist and scholar of the history of the book, particularly interested in material culture and the development and exchange of manuscript technologies across Eurasia, Africa, and the Americas.

Philipp Nothaft

History of Science · University of Oxford · *s*
AMIAS Member
Philipp Nothaft's project focuses on the role of observation and empiricism in high-medieval Latin astronomy.

Nana Osei-Opare

Africa, the Cold War, Black Political Thought · Fordham University
The Andrew W. Mellon Foundation Fellowship for Assistant Professors
Nana Osei-Opare will be working on his book, "Socialist De-Colony: Black and Soviet Entanglements in Ghana's Cold War and Decolonization Projects, 1957–66." It unpacks, rethinks, and ties Ghana's Cold War and political-economic projects to larger socialist and Marxist debates from multiple ideological and geographic vantage points.

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Arnaud Pelletier

Early Modern Philosophy · Université Libre de Bruxelles · *f*
Funding provided by the Fund for Historical Studies

Arnaud Pelletier is interested in early modern philosophy—with an emphasis on German Enlightenment from Leibniz to Kant—and its various contemporary uses, including in the social sciences. While at IAS, he is working on the philosophical agenda that prompted the emergence of the history of philosophy as an academic discipline in seventeenth- and eighteenth-century Germany.

Susan Dabney Pennybacker

Modern British and Transnational History · The University of North Carolina at Chapel Hill · *s*
George F. Kennan Member

Susan Dabney Pennybacker studies the history of Britain and the former British empire in a global context. She is completing a book on political exile and refuge in post-1945 London. South Africans, Indians, and Trinidadians lead the Cold War narrative.

Meron Martin Piotrkowski

Ancient Jewish History and Jewish Papyrology · Princeton University · *f*
Funding provided by the Herodotus Fund

Meron Martin Piotrkowski will be working on the history of the Jewish community of Oxyrhynchus in Egypt in early and late antiquity. Piotrkowski's project examines Jewish papyri from Oxyrhynchus and seeks to test the commonly accepted hypothesis that Egyptian Jewry was completely annihilated in the Diaspora Revolt (115–117 C.E.).

Pamela Maxine Potter

Music History, German Cultural History · University of Wisconsin–Madison · *s*
Infosys Member

Pamela Maxine Potter's work relates music, the arts, and the writing of cultural history to ideological, political, social, and economic conditions, focusing on nineteenth- and twentieth-century Germany. While at IAS, she will be completing her book on Berlin's rise to international fame as a music metropolis from the eighteenth century to the present.

Reza Pourjavady

Islamic Intellectual History · Otto-Friedrich-Universität Bamberg
Patricia Crone Member

Reza Pourjavady studies the history of philosophy and the inter-religious discussions in the Islamic world (thirteenth–nineteenth century). While at IAS, he is working on the reception of Averroes in the Islamic East.

f First Term · *s* Second Term · *m* Long-term Member · *v* Visitor · *dvp* Distinguished Visiting Professor
vp Visiting Professor · *ra* Research Associate

18

Leila Rahimi Bahmany

Comparative Literature, Persian Literature, Azeri Turkish Literature · v

While at IAS, Leila Rahimi Bahmany will be working on a book project dealing with the 'small literature' of an ethnically and linguistically minority population of Azeri Turks in Iran. The study addresses fictional and non-fictional prose narratives published between 1944 and 2000, and explores questions of suppressive monolingualism, historical memory, and the central power from their marginalized position, while highlighting the disruptive and dissident nature of minority literature to centralized linguistic homo-geneity, state-sanctioned national literature, and macro-historiography.

Christopher Ratté

Classical Archaeology · University of Michigan · *s*
Funding provided by The Andrew W. Mellon Foundation Fund

Christopher Ratté is a classical archaeologist specializing in the archae-ology of Turkey. His current field research focuses on the Aegean coastal site of Notion (near modern İzmir). At IAS, he will be working on a general book entitled "The Archaeology of Western Anatolia, ca. 1200–133 B.C.E."

Ali Raza

South Asia, Internationalism, Decolonization · Lahore University of Management Sciences
Willis F. Doney Member

Ali Raza is interested in utopian imaginations and visions of freedom and decolonization in the twentieth century. His first book, *Revolutionary Pasts* (2020), was on communist internationalism and decolonization in South Asia. At IAS, Raza will be working on his second book, which looks at fascist paramilitary organizations in colonial India.

Valentina Sagaria Rossi

Zaydi Manuscript Tradition, Arabic Codicology · Accademia Nazionale dei Lincei · *ra*

Valentina Sagaria Rossi has been working on ZMT (Zaydi Manuscript Tradition), and particularly on the Italian collections of Arabic Yemeni manuscripts. Related to this project, Sagaria Rossi is also focusing research on the network of correspondences of Islamist and Arabist scholars from the late nineteenth to the first half of the twentieth century.

Michele Renee Salzman

Roman History · University of California, Riverside · *v/f*

Michele Renee Salzman is interested in the social and religious history of late antiquity. While at IAS, she will be considering the political and economic role of elite women, with a particular focus on the age of Constantius II (337–361). He, with his second wife, Eusebeia, was critical in making Rome into a Christian/Arian Empire.

SCHOOL OF HISTORICAL STUDIES

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vp Visiting Professor · *ra* Research Associate

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Anna Sehnalova

Asian Studies, Anthropology · University of Oxford · *f*
Funding provided by the Herodotus Fund

Anna Sehnalova's interests are reflections of the natural environment in Tibet and the Himalayas, expressed through religion, ethnobotany, medicine, histories, and socio-politics. She co-leads the Oral History of Tibetan Studies. At IAS, Sehnalova is exploring theory, practice, and scientific knowledge of Tibetan healing rites.

Sharon Therese Strocchia

European History, Social History of Medicine · Emory University · *f*
Funding provided by The Andrew W. Mellon Foundation Fund

At IAS, Sharon Therese Strocchia will be working on her book, "Health for Sale: Marketing Medicines in Late Renaissance Italy." Combining medical history, business history, and print culture, her project historicizes the development of public trust in pharmaceuticals by looking at patents, early clinical trials, and innovative marketing practices.

Luke Sunderland

Medieval Literature and Culture · Durham University · *s*
Funding provided by the Fund for Historical Studies and the Patrons' Endowment Fund

While at IAS, Luke Sunderland will be working on medieval French encyclopedias, especially on the visual and verbal expression of ideas about knowledge, the cosmos, nature, bodies, and lives.

Judith Surkis

Modern European History · Institute for Advanced Study

Judith Surkis studies France and the French Empire, gender and sexuality, and intellectual, cultural, and legal history. Surkis is now writing "The Intimate Life of International Law: Children and Development After Decolonization," which explores conflicts over postcolonial sovereignty, with a special focus on international family law.

Anicia C. Timberlake

Musicology · Peabody Institute of the Johns Hopkins University · *f*
Edward T. Cone Member in Music Studies

Anicia C. Timberlake will be completing a book manuscript, "Political Education Beyond Words," which examines socialist music education in the German Democratic Republic. The book asks how socialist citizenship—and, by extension, the Cold War conflict—may be differently conceived via examining body-based music-pedagogical practices.

f First Term · *s* Second Term · *m* Long-term Member · *v* Visitor · *dvp* Distinguished Visiting Professor
vp Visiting Professor · *ra* Research Associate

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Allan A. Tulchin

French History · Shippensburg University · *s*
Willis F. Doney Member

Allan A. Tulchin studies social and religious change in France, 1500–1800. While at IAS, he will be writing a book on how the Enlightenment and the rise of the Atlantic economy helped persuade the people of eighteenth-century Bordeaux to support the French Revolution of 1789.

Alicia Walker

Medieval Art and Architectural History · Bryn Mawr College
Agnes Gund and Daniel Shapiro Member

Alicia Walker studies medieval material and visual culture with a focus on Byzantium and the medieval Islamic world. Her primary fields of research include intercultural artistic connections across Afro-Eurasia from the ninth to thirteenth centuries, and gender issues in the art and material culture of late antique and medieval Byzantium.
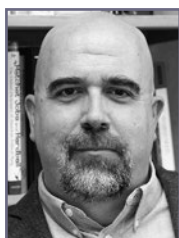
David Wilton

Linguistics, Medieval Literature · *v*

David Wilton's work focuses on cognitive approaches to medieval literature and historical linguistics. Presently, he is conducting ongoing work in the history of the English language and beginning a project on the sources and analogues of J.R.R. Tolkien's Middle-earth.

Mantha Zarmakoupi

Classical Archaeology, History of Architecture · University of Pennsylvania · *s*
Edwin C. and Elizabeth A. Whitehead Fellow

Mantha Zarmakoupi's research addresses the social, economic, and cultural conditions underpinning the production of ancient Mediterranean art, architecture, and urbanism. She is currently writing a monograph on the relationship between economic and social change, urban growth, and physical infrastructure in late Hellenistic and Roman Delos.
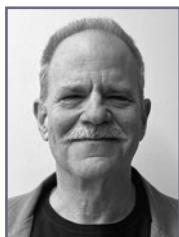
Peter Zarrow

Modern China, Intellectual and Cultural History · Academia Sinica
Funding provided by the Hetty Goldman Membership Fund

Peter Zarrow is interested in the intellectual and cultural history of East Asia and the global circulation of ideas. While at IAS, Zarrow is completing a manuscript tentatively titled, "Forbidden City–Meiji Shrine: A Dual Biography of East Asian Heritage Sites."

SCHOOL OF HISTORICAL STUDIES

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vp Visiting Professor · *ra* Research Associate

School of Mathematics

Administrative Officer: Nicole Maldonado

The School of Mathematics, established in 1933, was the first School at the Institute for Advanced Study. Oswald Veblen, Albert Einstein, John von Neumann, and Hermann Weyl were the first Faculty appointments. Kurt Gödel, who joined the Faculty in 1953, was one of the School's first Members. Today, the School is an international center for research in mathematics and theoretical computer science. Members discover new mathematical results and broaden their interests through seminars and interactions with the Faculty and with each other. Several central themes in mathematics in the last nine decades owe their major impetus to discoveries that took place at the Institute. As an example, the creation of one of the first stored-program computers, which von Neumann built on the Institute's campus, influenced the development of today's computers and formed the mathematical basis for computer software.

During the 2022–23 academic year, the School will have a special program on Applications of Dynamics in Number Theory and Algebraic Geometry. Tamar Ziegler of the Hebrew University in Jerusalem will be the Distinguished Visiting Professor. Confirmed participants include Karim Adiprasito, Vitaly Bergelson, Jan Draisma, James Maynard, Sarah Peluse, and Terence Tao.

The special year will focus on (still-evolving) interfaces between ergodic theory, additive combinatorics, multiplicative number theory, and algebraic geometry. In the past 20 years there have been spectacular interlacing advancements in ergodic theory, analytic number theory, and additive combinatorics, leading to the resolution of long standing conjectures. A well-known example is the Green-Tao theorem on arithmetic progressions in primes. A more recent example is the proof of the logarithmic Sarnak conjecture for uniquely ergodic systems; this proof combines structure theorems from dynamics and additive combinatorics with the recent understanding of the behavior of multiplicative functions in short intervals. One focus of the special year will be to further advance the interaction between these fields.

Another goal of the program will be to advance the interplay between additive combinatorics, theoretical computer science, and algebraic geometry over rings with many variables. In recent years, there is growing interest in stability phenomena in algebraic geometry, specifically in properties of polynomial rings that are stable in the number of variables (e.g., Stillman conjecture). Problems of a similar nature were independently studied by researchers in additive combinatorics in relation to Ramsey questions in finite field geometry. The two contexts are linked via model theory. The program will bring together researchers on both sides to explore this connection further.

Other programs associated with the School are the Park City Mathematics Institute (PCMI), an innovative program integrating mathematics research and mathematics education, and the Program for Women and Mathematics (jointly sponsored by the National Science Foundation, Lisa Simonyi, Institute for Advanced Study, Minerva Research Foundation, and Princeton University), which brings together research mathematicians with women undergraduate and graduate students for an intensive week-long workshop traditionally held on campus.

SCHOOL OF MATHEMATICS
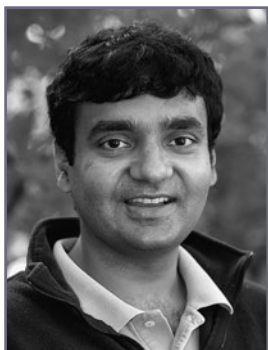
Bhargav Bhatt

Fernholz Joint Professor

Bhargav Bhatt is interested in algebraic geometry, in a broad sense, and especially enjoys arithmetic questions. He has made fundamental contributions to p-adic Hodge theory and applied them to longstanding questions in commutative algebra and algebraic topology.

Camillo De Lellis

IBM von Neumann Professor

Camillo De Lellis, a geometric analyst, has broad expertise in the calculus of variations, geometric measure theory, and fluid dynamics. Using modern tools and innovative approaches, De Lellis has contributed to central problems in analysis and geometry, resulting in the creation of a transparent proof of regularity and opening new lines of inquiry for geometric analysts to explore.
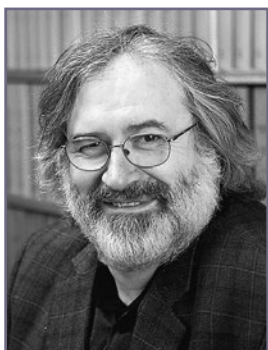
Helmut Hofer

Hermann Weyl Professor

One of the founders of the area of symplectic topology, Helmut Hofer works on symplectic geometry, dynamical systems, and partial differential equations. His fundamental contributions to the field have led to a new area of mathematics known as Hofer geometry.
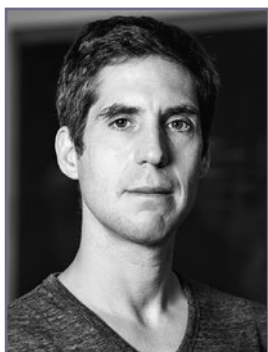
Jacob Lurie

Frank C. and Florence S. Ogg Professor

Jacob Lurie's research has influenced a diverse range of fields from topology to number theory, providing foundational work that has changed the way mathematicians describe and work with derived phenomena. His ideas have redefined the foundations of homotopy theory and topological aspects of algebraic geometry, providing a channel through which algebraic topology influences algebraic geometry. His proof of the Baez–Dolan cobordism hypothesis changed the field drastically, providing a precise dictionary between manifold theory and operadic algebra as well as an applicable language for topological field theory.

Peter Sarnak

Gopal Prasad Professor

Peter Sarnak has made major contributions to number theory and to questions in analysis motivated by number theory. His interest in mathematics is wide-ranging, and his research focuses on the theory of zeta functions and automorphic forms with applications to number theory, combinatorics, and mathematical physics.

Akshay Venkatesh

Robert and Luisa Fernholz Professor

Akshay Venkatesh is a mathematician who has worked on many topics at the interface between number theory and other fields, including representation theory, dynamics, and algebraic topology. His recent work examines new algebraic structures related to the topology of locally symmetric spaces.

SCHOOL OF MATHEMATICS

Avi Wigderson
Herbert H. Maass Professor

Avi Wigderson is a widely recognized authority in the diverse and evolving field of theoretical computer science. His main research area is computational complexity theory. This field studies the power and limits of efficient computation and is motivated by such fundamental scientific problems as Does P = NP? (Can mathematical creativity be efficiently automated?) Can every efficient process be efficiently reversed? (Is electronic commerce secure?) Can randomness enhance efficient computation? Can quantum mechanics enhance efficient computation? How do we learn, and can machines be taught to learn like us (or better)?

Enrico Bombieri
Professor Emeritus

Enrico Bombieri, a Fields Medalist for his work on the large sieve and its application to the distribution of prime numbers, is one of the world's leading authorities on number theory and analysis. His work ranges from analytic number theory to algebra and algebraic geometry, and the partial differential equations of minimal surfaces. In the past decade, his main contributions have been in the active area of Diophantine approximation and Diophantine geometry, exploring questions on how to solve equations and inequalities in integers and rational numbers. Some of the above topics, in particular those related to prime number theory, have potential practical applications to cryptography and security of data transmission and identification.
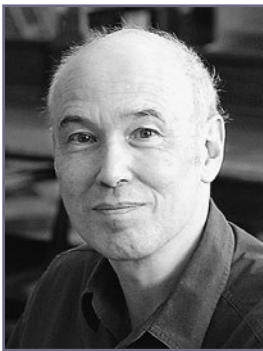
Pierre Deligne
Professor Emeritus

Pierre Deligne is known for his work in algebraic geometry and number theory. He pursues a fundamental understanding of the basic objects of arithmetical algebraic geometry—motive, L-functions, Shimura varieties—and applies the methods of algebraic geometry to trigonometrical sums, linear differential equations and their monodromy, representations of finite groups, and quantization deformation. His research includes work on Hilbert's twenty-first problem, Hodge theory, the relations between modular forms, Galois representations and L-series, the theory of moduli, tannakian categories, and configurations of hyperplanes.

SCHOOL OF MATHEMATICS

Phillip A. Griffiths
Professor Emeritus

Phillip Griffiths initiated with his collaborators the theory of variation of Hodge structure, which has come to play a central role in many aspects of algebraic geometry and its uses in modern theoretical physics. In addition to algebraic geometry, he has made contributions to differential and integral geometry, geometric function theory, and the geometry of partial differential equations. A former Director of the Institute (1991–2003), Griffiths chaired the Science Initiative Group, which fosters science in the developing world through programs such as the Carnegie–IAS African Regional Initiative in Science and Education.
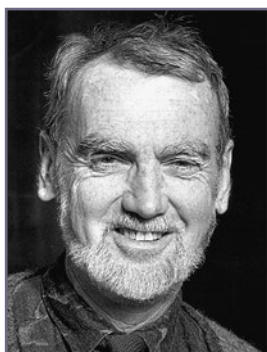
Robert P. Langlands
Professor Emeritus

Robert Langlands's profound insights in number theory and representation theory include the formulation of general principles relating automorphic forms and algebraic number theory; the introduction of a general class of L-functions; the construction of a general theory of Eisenstein series; the introduction of techniques for dealing with particular cases of the Artin conjecture (which proved to be of use in the proof of Fermat's theorem); the introduction of endoscopy; and the development of techniques for relating the zeta functions of Shimura varieties to automorphic L–functions. Mathematicians have been working on his conjectures, the Langlands Program, for the last three decades. In recent years, he has been preoccupied by the geometric theory of automorphic forms. He has only now reached the stage at which he can contemplate publication.

Robert MacPherson
Professor Emeritus

Robert MacPherson's work has introduced radically new approaches to the topology of singular spaces and promoted investigations across a great spectrum of mathematics. He works in several fields of geometry-topology, algebraic geometry, differential geometry, and singularity theory. He is especially interested in aspects of geometry that interact with other areas of mathematics, such as the geometry of spaces of lattices, which interacts with modular forms, and the geometry of toric varieties, which interacts with combinatorics.
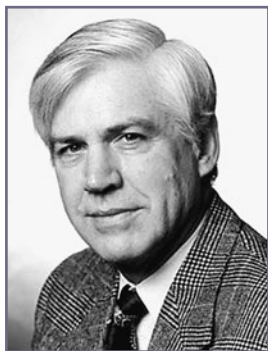
Thomas Spencer

Professor Emeritus

Thomas Spencer has made major contributions to the theory of phase transitions and the study of singularities at the transition temperature. In special cases, he and his collaborators have proved universality at the transition temperature. Spencer has also worked on partial differential equations with stochastic coefficients, especially localization theory. He is presently developing a mathematical theory of supersymmetric path integrals to study the quantum dynamics of a particle in random media. His other interests include random matrices, chaotic behavior of dynamical systems, and nonequilibrium theories of turbulence.

Ethan M. Ackelsberg

Ergodic Theory, Combinatorics · Institute for Advanced Study
Funding provided by the National Science Foundation
Ethan M. Ackelsberg works at the interface of ergodic theory, Ramsey theory, and combinatorial number theory.

Karim Alexander Adiprasito

Combinatorics, Algebra, Geometry · Institute for Advanced Study · *s*
Funding provided by The Ambrose Monell Foundation
Karim Alexander Adiprasito is currently interested in Hopf conjecture and algebraic approaches.

Toni Annala

Mathematics · Institute for Advanced Study
Funding provided by the Simons Foundation
Most of Toni Annala's work deals with foundational questions related to intersection theory and algebraic cobordism.

Alexey Balitskiy

Geometry · Institute for Advanced Study
Funding provided by the National Science Foundation
Alexey Balitskiy is interested in metric geometry (systoles, Urysohn width, etc.), as well as some symplectic/convex/discrete geometry.

Oishee Banerjee

Algebraic Topology, Algebraic Geometry · Institute for Advanced Study
Funding provided by the National Science Foundation
Oishee Banerjee's interests lie at the intersection of algebraic geometry, algebraic topology, and number theory. She likes thinking about the topology of algebraic spaces, broadly interpreted, that naturally originate from various moduli problems.

SCHOOL OF MATHEMATICS

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vri Veblen Research Instructor · *vnf* von Neumann Fellow

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Aleksandr Berdnikov
Geometric Topology · Institute for Advanced Study
Erik Ellentuck Fellow
Aleksandr Berdnikov is interested in studying the behavior of metric complexity of topological objects (say, what Lipschitz constant one needs to realize a given homotopy class, or null-homotope a given mapping, etc., asymptotically speaking). At IAS, Berdnikov's intent is to focus on the h-principles that the special year program lays out.

Vitaly Bergelson
Mathematics · *s*
Funding provided by the Charles Simonyi Endowment
Vitaly Bergelson is interested in interaction between ergodic theory, number theory, and combinatorics.

Jacob Bernstein
Geometry · Johns Hopkins University
Funding provided by the Charles Simonyi Endowment
Jacob Bernstein is interested in the geometric calculus of variations, with a focus on minimal surface theory and mean curvature flow.

Arthur Bik
Algebraic Geometry, Representation Theory · Institute for Advanced Study
Funding provided by the Simons Foundation
Arthur Bik is interested in the geometry of polynomials and their rank functions, in particular when the number of variables grows large. While at IAS, he plans to explore the connections between this topic and the field of additive combinatorics.

Bjoern Bringmann
Partial Differential Equations · Institute for Advanced Study · *v*
Bjoern Bringmann's research interests lie at the intersection of partial differential equations and probability theory. More specifically, he has been working on dispersive equations, such as nonlinear wave and Schrödinger equations, with random initial data.

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vri Veblen Research Instructor · *vnf* von Neumann Fellow

Timothy Browning

Number Theory · Institute of Science and Technology Austria · *f*

Timothy Browning is interested in local and global solubility of Diophantine equations, counting rational points of bounded height on varieties, and in their function field analogues, together with their connection to questions in algebraic geometry about moduli spaces.

Elia Bruè

Metric Geometry, Partial Differential Equations · Institute for Advanced Study

Giorgio and Elena Petronio Fellow

Elia Bruè works in metric geometry and partial differential equations. He has been investigating the structure of non-smooth spaces with Ricci curvature bounded from below, quantitative properties of ODE flows, and solutions to partial differential equations with rough coefficients mainly coming from fluid mechanics.

Matija Bucic

Discrete Mathematics, Combinatorics · Institute for Advanced Study and Princeton University

Funding provided by the Oswald Veblen Fund

Matija Bucic is interested in a number of topics, including but not limited to Ramsey theory, algebraic and probabilistic methods in combinatorics, directed graph theory, extremal set theory, theoretical computer science, and random structures.

Sky Yang Cao

Probability · Institute for Advanced Study

Minerva Research Foundation Member

Sky Yang Cao is interested in probability, and its relations to mathematics, statistics, physics, and computer science.

Julian Chaidez

Contact and Symplectic Geometry · Princeton University · *v*

Julian Chaidez is interested in symplectic topology, dynamical systems, low-dimensional topology, and symplectic field theory. At IAS, he will study the role of convexity in Reeb dynamics, the formulation of quantum 4-manifold invariants via trisections, and virtual fundamental cycle methods in symplectic geometry.

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f First Term · *s* Second Term · *v* Visitor · *dvp* Distinguished Visiting Professor · *vp* Visiting Professor
vri Veblen Research Instructor · *vnf* von Neumann Fellow

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Lin Chen

Geometric Langlands Program · Institute for Advanced Study
Funding provided by the Simons Foundation

Lin Chen is interested in geometric representation theory, algebraic geometry, and higher category theory. Chen has been working on the geometric Langlands program.

Alexis Chevalier

Mathematics · Institute for Advanced Study
Minerva Research Foundation Member

Alexis Chevalier is interested in model theory and its interactions with other areas of mathematics. While at IAS, Chevalier will research applications of model theory to combinatorics in finite fields and applications of continuous logic to ergodic theory.

Laura Cladek

Mathematics · Institute for Advanced Study · *vnf*
Funding provided by the National Science Foundation

Laura Cladek's research interests have their roots in Euclidean harmonic analysis and Fourier analysis, with a strong geometric and combinatorial flavor. Further interests include incidence geometry and additive combinatorics, in particular quantitative structural theorems. Cladek's research has also demonstrated some movement towards physics applications.

Leonardo Coregliano

Graph Limits, Extremal Combinatorics · Institute for Advanced Study

Leonardo Coregliano is interested in the theory of graph limits, its generalization to universal first-order theories (also known by the name continuous combinatorics), and their applications to extremal combinatorics.

Mimi Dai

Partial Differential Equations · University of Illinois at Chicago · *v*

Mimi Dai works on analysis of partial differential equations, harmonic analysis, and fluid dynamics.

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vri Veblen Research Instructor · *vnf* von Neumann Fellow

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Ipsita Datta

Symplectic Geometry · Institute for Advanced Study
Funding provided by the National Science Foundation

Ipsita Datta is interested in applications of holomorphic curve techniques to studying Lagrangians. This includes interests in Lagrangian cobordisms in $\mathbf{R}^4$, knot diagrams, moduli spaces of holomorphic disks with corners, algebraic structures from moduli spaces, and obstruction bundle gluing.
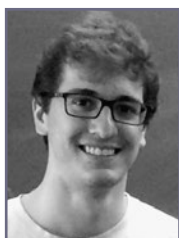
Alexandre Perozim de Faveri

Number Theory · Institute for Advanced Study
Funding provided by the National Science Foundation

Alexandre Perozim de Faveri works in analytic number theory, particularly on L-functions and their applications to adjacent areas. While at the Institute, he plans to investigate questions related to quantum unique ergodicity and equidistribution.

Vesselin Dimitrov

Mathematics · Institute for Advanced Study
Funding provided by the National Science Foundation

Vesselin Dimitrov is interested in the small-scale distribution properties of Galois orbits of algebraic points. At IAS, he plans to explore a new kind of arithmetic algebraization theorems for formal power and Dirichlet series, with an eye to applications to transcendence and to Dirichlet L-functions.

Jan Draisma

Algebra · Universität Bern · *f*

Jan Draisma is interested in commutative algebra, algebraic geometry, and their applications in other branches of mathematics and the sciences. He currently works on infinite-dimensional algebraic varieties that are Noetherian modulo the action of a large group.

Sergio Fenley

Low-Dimensional Topology, Dynamical Systems · Florida State University

In the last few years, Sergio Fenley has been working primarily with partially hyperbolic (PH) diffeomorphisms in dimension 3. The goal is to understand and classify them. Together with collaborators, Fenley has obtained important results for understanding the homotopic to the identity case, or when the manifold is hyperbolic.

SCHOOL OF MATHEMATICS

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vri Veblen Research Instructor · *vnf* von Neumann Fellow

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Nikos Frantzikinakis

Mathematics · s
Ralph E. and Doris M. Hansmann Member

Nikos Frantzikinakis is interested in ergodic theory (primarily multiple recurrence and convergence problems) and its interactions with combinatorics (density and partition regularity problems) and number theory (randomness properties of multiplicative functions).

Alexander Gamburd

Mathematics · University of California, Santa Cruz · *f*

While at IAS, Alexander Gamburd plans to conduct research pertaining to arithmetics and dynamics on varieties of Markoff type.

Federico Glaudo

Mathematics · Institute for Advanced Study
Funding provided by the National Science Foundation

Federico Glaudo is interested in analysis in a broad sense: he works on partial differential equations, functional and geometric inequalities, and optimal transport.

Mark Goresky

Geometry, Automorphic Forms · Institute for Advanced Study · *v*

Mark Goresky is studying the moduli space of abelian varieties with real structures and its finite field analogues.

Fernando Granha Jeronimo

Theoretical Computer Science · Institute for Advanced Study
Funding provided by the National Science Foundation

Fernando Granha Jeronimo is broadly interested in theoretical computer science and its connections to mathematics. He has been investigating problems involving coding theory, expansion, optimization, and pseudorandomness.

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vri Veblen Research Instructor · *vnf* von Neumann Fellow

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Rachel Greenfeld

Fourier Analysis, Additive Combinatorics · University of California, Los Angeles
AMIAS Member

Rachel Greenfeld works in harmonic analysis and arithmetic combinatorics and is interested in applications to problems of geometry. At the Institute, she plans to combine Fourier analysis and combinatorial techniques with ergodic theory and number theory tools to study problems of tilings and orthogonal systems of exponentials.

Peter James Haine

Mathematics · Institute for Advanced Study
Funding provided by the Simons Foundation

Peter James Haine's research focuses on problems in homotopy theory, algebraic geometry, and related subjects. Haine's recent work focuses on exit-path categories in algebraic geometry and microlocal sheaf theory.

Bernhard Hanke

Geometry, Topology · ƒ

Bernhard Hanke works in the fields of differential geometry, algebraic and geometric topology, and global analysis. While at IAS, Hanke will focus on scalar curvature geometry.

Michael Harrison

Differential Topology · Institute for Advanced Study
Funding provided by the National Science Foundation

Michael Harrison studies immersion and embedding problems using h-principle techniques and Borsuk–Ulam type results. He studies classification problems for skew fibrations and great sphere fibrations, topological and geodesic complexity of configuration spaces, and billiards on Finsler manifolds and on spaces of geodesics.

Wei Ho

Number Theory, Algebraic Geometry · University of Michigan and Princeton University · *vp*

Wei Ho's research is in number theory, algebraic geometry, and related fields. Some of her favorite work involves finding arithmetic applications of classical algebro-geometric constructions.

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vri Veblen Research Instructor · *vnf* von Neumann Fellow

D. Dominique Kemp

Harmonic Analysis · Institute for Advanced Study
Shiing-Shen Chern Member

D. Dominique Kemp is currently interested in the interplay between harmonic analysis and geometry, and its possible connections to number theory. Such topics as restriction theory and decoupling, Bochner-Riesz theory for convex domains, and maximal averages—all concerning hypersurfaces of vanishing curvature—are a primary focus for him.

Dmitry Kleinbock

Ergodic Theory, Diophantine Approximation · Brandeis University · *f*

While at IAS, Dmitry Kleinbock will study interactions between ergodic theory on homogeneous spaces and Diophantine approximation, with possible connections to additive combinatorics.

Alexander Kleshchev

Mathematics · University of Oregon
Funding provided by the Charles Simonyi Endowment

Alexander Kleshchev is working in representation theory and Lie theory. During Kleshchev's stay at IAS, he will be working on local description of blocks of finite groups and Schur algebras up to derived equivalence.

Hana Jia Kong

Algebraic Topology, Homotopy Theory · Institute for Advanced Study
Funding provided by the National Science Foundation

Hana Jia Kong's research interest is algebraic topology, with a particular emphasis on motivic and equivariant homotopy theory.

Shrawan Kumar

Geometric Methods in Representation Theory · University of North Carolina at Chapel Hill · *f*

Shrawan Kumar is interested in a positivity question in the T-equivariant quantum K-theory of flag varieties. While at IAS, he plans to work on this question, as well as an analogue of the PRV conjecture for the fusion product of representations at any level.

f First Term · *s* Second Term · *v* Visitor · *dvp* Distinguished Visiting Professor · *vp* Visiting Professor
vri Veblen Research Instructor · *vnf* von Neumann Fellow

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Zahra Lakdawala

Industrial Mathematics · Lahore University of Management Services · *v*

Zahra Lakdawala puts math into practice. Her research areas are modeling, simulation, machine learning, and optimization, with a focus on multi-scale and multi-physics processes in plain and porous media. Beneficiaries of her work are groundwater consultants, the automotive filtration industry, and diaper manufacturers.

Amichai Lampert

Mathematics · Institute for Advanced Study · *v*
Funding provided by the National Science Foundation

Amichai Lampert is interested in various notions of rank for polynomials and the relationship between them. While at IAS, Lampert will research connections that have arisen in recent years between these ideas and additive combinatorics, analytic number theory, and commutative algebra.
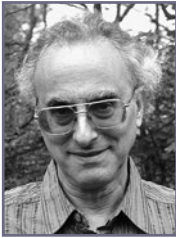
Michael Larsen

Algebra · Indiana University · *f*

Michael Larsen is interested in algebra, particularly group theory, algebraic number theory, and algebraic geometry.
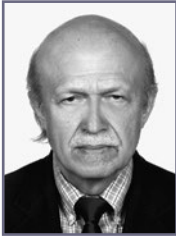
Mariusz Lemańczyk

Mathematics · Nicolaus Copernicus University in Toruń
Funding provided by the Giorgio and Elena Petronio Fellowship II Fund

Mariusz Lemańczyk is interested in ergodic theory and its interactions with number theory, spectral theory, and probability theory. While at IAS, Lemańczyk will research relations between ergodic theory and analytic number theory: Furstenberg systems of multiplicative functions, Sarnak's conjecture, and prime number theorems in dynamics.

Yau Wing Li

Representation Theory · Institute for Advanced Study
Funding provided by the National Science Foundation and the University of Melbourne

Yau Wing Li works in geometric representation theory, with an emphasis on affine Hecke categories and their applications in the local geometric Langlands program.

SCHOOL OF MATHEMATICS

f First Term · *s* Second Term · *v* Visitor · *dvp* Distinguished Visiting Professor · *vp* Visiting Professor
vri Veblen Research Instructor · *vnf* von Neumann Fellow

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Noam Lifshitz

Combinatorics · The Hebrew University of Jerusalem · *v/f*
Bell System Fellowship

Noam Lifshitz is interested in extremal and (non–abelian) additive combinatorics. He is especially interested in results that are motivated from the theory of Boolean functions.

Hans Lindblad

Mathematics · University of California, San Diego · *s*

Hans Lindblad's research interests include partial differential equations, fluid dynamics, and relativity.

Ayelet Lindenstrauss

Algebraic Topology · Indiana University · *v/f*

Ayelet Lindenstrauss is interested Hochschild-type invariants of rings and ring spectra. She is working on using trace methods to apply these to calculations of algebraic K-theory, and also on using these invariants to better understand extensions of ring spectra, on analogy with the behavior of discrete rings.

Simon Machado

Group Theory, Ergodic Theory, Combinatorics · Institute for Advanced Study
Funding provided by the National Science Foundation

Simon Machado is interested in the interplay between Lie group theory, ergodic theory, and combinatorics. In particular, he has studied long–range arithmetic and geometric properties of certain aperiodic subsets in homogeneous spaces (e.g., in Euclidean, hyperbolic, and symmetric spaces).

Frederick Manners

Additive Combinatorics · University of California, San Diego · *vnf/s*
Funding provided by the National Science Foundation

Frederick Manners is interested in additive combinatorics and its adjacent fields: analytic number theory, ergodic theory, combinatorics, analysis, and algebra. While at IAS, he will focus on the overlap with dynamics and ergodic theory. A key motivating problem is to obtain bounds in the multidimensional Szemerédi Theorem.

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vri Veblen Research Instructor · *vnf* von Neumann Fellow

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James Maynard
Number Theory · University of Oxford · *f*
Friends of the Institute for Advanced Study Member
James Maynard is interested in analytic number theory and related topics. He is particularly interested in the distribution of prime numbers.

Paul Minter
Geometric Analysis · Institute for Advanced Study · *vri*
Paul Minter is interested in problems arising in geometric analysis, geometric measure theory, and more broadly the calculus of variations and partial differential equations. During his time at the Institute, a focus of his work will be on regularity questions arising in the study of minimal submanifolds and other geometric phenomena.

Mariusz Mirek
Fourier Analysis, Ergodic Theory · Universität Bonn
Mariusz Mirek is interested in Fourier analysis and ergodic theory. While at IAS, Mariusz Mirek will carry out research on the Furstenberg-Bergelson-Leibman conjecture.

Andrea Montanari
Statistics, Learning Theory, Probability · Stanford University · *vp/f*
Supported by Eric and Wendy Schmidt
Andrea Montanari would like to understand (1) which high-dimensional distribution can be learned from a small number of samples, and with limited computation; (2) which of these distributions are relevant to model the real world; (3) how do modern machine learning methods achieve these goals.

Joel Moreira
Ergodic Theory, Arithmetic Ramsey Theory · University of Warwick · *s*
Funding provided by the Charles Simonyi Endowment
Joel Moreira is interested in ergodic theory and topological dynamics, as well as their applications to arithmetic Ramsey theory and combinatorial number theory.

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vri Veblen Research Instructor · *vnf* von Neumann Fellow

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Agustin Moreno

Contact and Symplectic Geometry · Institute for Advanced Study
Funding provided by the National Science Foundation

Agustin Moreno is broadly interested in contact and symplectic geom-etry, and interactions (e.g., mathematical physics, or Hamiltonian dynamics). At IAS, Moreno will continue work that has recently given insights into the well-known restricted 3-body problem from a theo-retical standpoint, but also with a view towards practical applications such as space mission design.
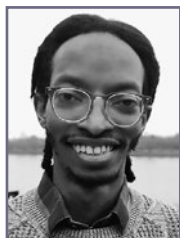
Jean Pierre Mutanguha

Geometric Group Theory · Institute for Advanced Study and Princeton University · *v*

Jean Pierre Mutanguha cannot stop thinking about equivalences between the dynamics of free group automorphisms and the geometry of free-by-cyclic groups. Although the established equivalences are few and far between, Mutanguha suspects there is a lot more waiting to be discovered. On occasion, he finds himself studying 2- and 3-manifolds.

Jo Nelson

Mathematics · Rice University · *s*
Stacy and James Sarvis Founders' Circle Member

Jo Nelson studies symplectic and contact geometry. She develops Floer theories that capture dynamical information about Hamiltonian and Reeb vector fields. At IAS, she plans to explore connections between area-preserving diffeomorphisms of surfaces with boundary and contact geometry.

Ron Peled

Probability Theory, Statistical Physics · Tel Aviv University
Cynthia and Robert Hillas Founders' Circle Member

Ron Peled is studying questions involving probability theory, with a special focus on problems originating from statistical mechanics. He takes a mathematical physics approach to study universality phenomena, phase transitions, and disorder effects in physical systems of large size.

Sarah Peluse

Number Theory · Institute for Advanced Study and Princeton University · *vri*

Sarah Peluse works in analytic number theory and arithmetic com-binatorics, and is especially interested in questions in higher-order Fourier analysis and additive number theory.

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vri Veblen Research Instructor · *vnf* von Neumann Fellow

Toniann Pitassi

Computational Complexity, Proof Theory · University of Toronto and Columbia University · *vp/f*
Funding provided by the National Science Foundation

Toniann Pitassi's research area is complexity theory: understanding the limitations of computation, specializing in circuit complexity, proof complexity, and communication complexity. She is also interested in mathematical models for privacy–preserving computation and non-discriminatory machine learning.

Cosmin Pohoata

Combinatorics · Yale University
Funding provided by the National Science Foundation

Cosmin Pohoata is interested in extremal combinatorics, additive number theory, and discrete geometry, in the interactions between these areas, and also in their interactions with other fields.

Piotr Pstragowski

Homotopy Theory · Institute for Advanced Study
Funding provided by the National Science Foundation

Piotr Pstragowski studies stable homotopy theory and its interactions with algebraic geometry and arithmetic.

Vinicius Gripp Barros Ramos

Symplectic Geometry · Instituto Nacional de Matemática Pura e Aplicada · *vnf*
Funding provided by the National Science Foundation

Vinicius Gripp Barros Ramos is interested in symplectic topology and contact dynamics. His work focuses on understanding the interactions between symplectic embeddings, integrable systems, and billiard dynamics.

Orit Esther Raz

Hebrew University of Jerusalem · *v*

Orit Ester Raz is interested in questions in combinatorial geometry. Her most recent article is "Counting and Cutting Rich Lenses in Arrangements of Circles" (2022).

SCHOOL OF MATHEMATICS

f First Term · *s* Second Term · *v* Visitor · *dvp* Distinguished Visiting Professor · *vp* Visiting Professor
vri Veblen Research Instructor · *vnf* von Neumann Fellow

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Guillaume Remy

Probability, Mathematical Physics · Institute for Advanced Study
Funding provided by the James D. Wolfensohn Fund

Guillaume Remy's interests lie at the interface between probability theory, mathematical physics, and geometry. In particular, Remy is currently studying the Liouville conformal field theory, which allows us to understand random geometry in 2D. His goal for the coming year is to study the moduli of random surfaces and the conformal blocks of CFT.

Semon Kirillovich Rezchikov

Symplectic Topology, Mathematical Physics · Institute for Advanced Study and Princeton University · *vri*

Semon Krillovich Rezchikov is interested in the algebra and analysis of partial differential equations of Floer-theoretic origin. He is working on aspects of the Fueter equations, which underlie the A-twist of the 3D N=4 theories, as well as on equivariant and arithmetic structures associated with Hamiltonian Floer homology.

Florian K. Richter

Mathematics · Northwestern University
Funding provided by the National Science Foundation

Florian K. Richter is interested in the study of dynamical systems, and his research focuses on applications of ergodic theory to combinatorics and number theory.

Mark Sellke

Probability, Machine Learning · Institute for Advanced Study

Mark Sellke is interested in probability, statistics, optimization, and learning. A recent focus of his is algorithmic thresholds for random optimization problems (e.g., mean–field spin glass Hamiltonians).

Patrick Shafto

Machine and Human Learning · Rutgers University–Newark

Patrick Shafto works on machine learning, human learning, and cooperation using techniques from probabilistic machine learning, optimal transportation, and behavioral research.

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vri Veblen Research Instructor · *vnf* von Neumann Fellow

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Or Shalom
Mathematics · Institute for Advanced Study
Funding provided by the National Science Foundation
Or Shalom's research area is ergodic theory and additive combinatorics.

Scott Sheffield
Probability · Massachusetts Institute of Technology · *vp*
Scott Sheffield is interested in probability, game theory, and mathe-matical physics. While at IAS, he will be working on gauge theory, random surfaces, conformal probability, and other probability problems related to statistical physics and field theory.

Zvi Shem-Tov
Mathematics · Institute for Advanced Study
Funding provided by the National Science Foundation
Zvi Shem-Tov is interested in distributional properties of automorphic forms. While at IAS, Shem-Tov will research such properties in the context of the quantum unique ergodicity problem for various locally symmetric spaces.

Artane Jeremie Siad
Arithmetic Statistics · Princeton University
Funding provided by the National Science Foundation
Artane Jeremie Siad is interested in arithmetic statistics and related areas. While at IAS, he hopes to understand the distribution of class groups in thin families of global fields.

Xin Sun
Probability, Mathematical Physics · University of Pennsylvania
Funding provided by the S. S. Chern Foundation for Mathematical Research Fund
Xin Sun is interested in random geometry, statistical physics, and con-formal field theory. While at IAS, Xin Sun will work on the interplay between Schramm-Loewner evolution, Liouville quantum gravity, and conformal field theory.

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vri Veblen Research Instructor · *vnf* von Neumann Fellow

Shira Tanny

Symplectic Geometry · Institute for Advanced Study

Shira Tanny works mainly in symplectic geometry and Hamiltonian dynamics. She is especially interested in applications of Floer-type theories and pseudoholomorphic curves to dynamical questions.

Terence Tao

Analysis, Combinatorics, Number Theory · University of California, Los Angeles · *s*
Funding provided by the Charles Simonyi Endowment

Terence Tao is interested in all areas of analysis as well as several related fields. He is currently working on questions in additive combinatorics and in analytic prime number theory.

Roei Tell

Computational Complexity · Institute for Advanced Study
Funding provided by The Ambrose Monell Foundation and the National Science Foundation

What are the limits of efficient computation? Roei Tell works in computational complexity, the mathematical field that delineates the capabilities of algorithms and computers. He focuses on fundamental questions in this area, exploring the connections between randomness, algorithms, and problems that computers cannot solve efficiently.

Joni Teräväinen

Number Theory · Institute for Advanced Study · *vnf/f*
Funding provided by the National Science Foundation

Joni Teräväinen studies analytic number theory and additive combinatorics, as well as their connections to higher-order Fourier analysis and ergodic theory.

Karen Uhlenbeck

Geometric Partial Differential Equations, Gauge Theory · The University of Texas at Austin · *dvp*

Karen Uhlenbeck works primarily on geometric partial differential equations. She has worked in the areas of the calculus of variations, minimal surfaces, harmonic maps, gauge theory, and integrable systems. Her current interest is in analysis connected with the best Lipschitz model for Teichmüller space of Thurston.

SCHOOL OF MATHEMATICS

f First Term · *s* Second Term · *v* Visitor · *dvp* Distinguished Visiting Professor · *vp* Visiting Professor
vri Veblen Research Instructor · *vnf* von Neumann Fellow

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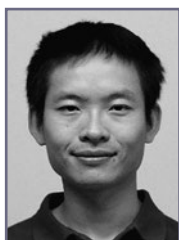
Zhiren Wang

Mathematics · Institute for Advanced Study · *vnf/f*
Funding provided by the National Science Foundation and the Ky Fan and Yu-Fen Fan Endowment Fund

Zhiren Wang is interested in dynamical systems and group actions.

Anna Wienhard

Mathematics · Princeton University
Funding provided by The Ambrose Monell Foundation

Anna Wienhard is interested in Lie groups and their discrete subgroups, higher rank Teichmüller theory, total positivity and its generalizations, moduli spaces, geometric structures, and applications of geometry and topology in data analysis.

Pei Wu

Theoretical Computer Science · Institute for Advanced Study
Funding provided by the National Science Foundation

Pei Wu is broadly interested in theoretical computer science. Wu's current interests includes communication complexity, query complexity, etc.

Guangbo Xu

Symplectic Geometry, Mathematical Physics · Texas A&M University · *f*

Guangbo Xu is interested in foundations and techniques in symplectic geometry, especially those concerning pseudoholomorphic curves and the virtual technique. Applications range from the mathematical foundation of the gauged linear sigma model to integral counting of pseudoholomorphic curves, and various other related topics.

Or Zamir

Algorithms, Data Structures, Graph Theory, Combinatorics · Institute for Advanced Study · *v*

Or Zamir's fields of interest revolve around algorithms, data structures, graph theory, and combinatorics. In previous work, Zamir obtained faster algorithms for solving NP-complete problems including k–SAT and k–coloring.

SCHOOL OF MATHEMATICS

f First Term · *s* Second Term · *v* Visitor · *dvp* Distinguished Visiting Professor · *vp* Visiting Professor
vri Veblen Research Instructor · *vnf* von Neumann Fellow

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Bogdan Zavyalov
Mathematics · Institute for Advanced Study
Funding provided by the Charles Simonyi Endowment
Bogdan Zavyalov is interested in p-adic Hodge theory.

Tamar Ziegler
Mathematics · Technion–Israel Institute of Technology · *dvp*
Tamar Ziegler is interested in dynamics, number theory, and combinatorics.

SCHOOL OF MATHEMATICS

Karen EDGE Fellowship

IN A PARTNERSHIP with IAS, the Karen EDGE Fellowship works to support and enhance the research programs and collaborations of mid-career mathematicians, as well as promote greater diversity and inclusion in mathematics. The fellowship was created with the generous support of Abel Prize winner Karen Uhlenbeck, in conjunction with the EDGE Foundation.

KAREN EDGE FELLOWS

Malena Español
Pamela Harris
Emille Lawrence
Mohamed Omar
Manuel Rivera
Bobby Wilson

f First Term · *s* Second Term · *v* Visitor · *dvp* Distinguished Visiting Professor · *vp* Visiting Professor
vri Veblen Research Instructor · *vnf* von Neumann Fellow

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School of Natural Sciences

Administrative Officer: Michelle Sage

THE SCHOOL OF NATURAL SCIENCES, established in 1966, provides a unique atmosphere for research in broad areas of theoretical physics, astronomy, and systems biology.

From its earliest days, the Institute has been a leading center for fundamental physics, contributing substantially to many of its central themes, which now interrelate with mathematics, astrophysics, and biology. Members in the astrophysics research group employ an array of tools from theoretical physics, large-scale computer simulations, and ground- and space-based observational studies to investigate the origin and composition of the universe, and to use the universe as a laboratory to study fundamental physics. At the Simons Center for Systems Biology, established in the School in 2004, the tools of modern physics and mathematics are being applied to biological investigation. This collaborative and pioneering approach to the sciences, which extends to the Institute's School of Mathematics, Princeton University, Rockefeller University, and the larger scientific community, has transformed research in these fields and presents opportunities for powerful and important discoveries.

Areas of current interest in theoretical physics include elementary particle physics, particle phenomenology, string theory, quantum theory, and quantum gravity, and their relationship to geometry, theoretical and observational astrophysics, and cosmology. The astrophysics group combines theory with modern observational studies to understand a wide variety of astrophysical phenomena, from nearby planets to distant galaxies, from black holes to the dark matter and dark energy that dominate the evolution of the universe. The Simons Center conducts research at the interface of biology and the physical sciences, developing theoretical and experimental methods necessary for studying the collective behavior of biomolecules, cells, and organisms, exploring how individual components can give rise to complex, collective phenomena, and in some cases focusing on understanding disease processes.

The School also sponsors Prospects in Theoretical Physics, a two-week residential summer program traditionally held at the Institute for promising graduate students and postdoctoral scholars, who attend lectures and sessions on the latest advances and open questions in the field of theoretical physics.

Nima Arkani-Hamed

Professor · Particle Physics

One of the leading particle physics phenomenologists of his generation, Nima Arkani-Hamed is concerned with the relation between theory and experiment. His research has shown how the extreme weakness of gravity, relative to other forces of nature, might be explained by the existence of extra dimensions of space, and how the structure of comparatively low-energy physics is constrained within the context of string theory. He has taken a lead in proposing new physical theories that can be tested at the Large Hadron Collider at CERN in Switzerland.

Stanislas Leibler

Professor · Biology

Stanislas Leibler has made contributions to theoretical and experimental biology, extending the interface between physics and biology to develop new solutions and approaches to problems. Interested in the quantitative description of microbial systems, on both cellular and population levels, Leibler is developing the theoretical and experimental methods necessary for studying the collective behavior of biomolecules, cells, and organisms. By selecting a number of basic questions about how simple genetic and biochemical networks function in bacteria, he and his laboratory colleagues are beginning to understand how individual components can give rise to complex, collective phenomena.
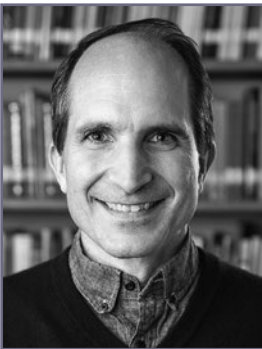
Juan Maldacena

Carl P. Feinberg Professor · Theoretical Physics

Juan Maldacena's work focuses on quantum gravity, string theory, and quantum field theory. He has proposed a relationship between quantum gravity and quantum field theories that elucidates various aspects of both theories. He is studying this relationship further in order to understand the deep connection between black holes and quantum field theories, and he is also exploring the connection between string theory and cosmology.

Nathan Seiberg

Charles Simonyi Professor · Mathematical Physics

Nathan Seiberg's research focuses on various aspects of string theory, quantum field theory, and particle physics. He has made deep contributions to the understanding of the dynamics of quantum field theories, especially two-dimensional conformal field theories and supersymmetric quantum field theories. His exact solutions of supersymmetric systems have uncovered many new and unexpected phenomena, including the fundamental role of electric-magnetic duality in these theories. These exact solutions have led to many applications in physics and in mathematics. Recently, he combined insights from his earlier work to shed new light on quantum field theories in three space-time dimensions, which are also of interest to condensed matter physics.
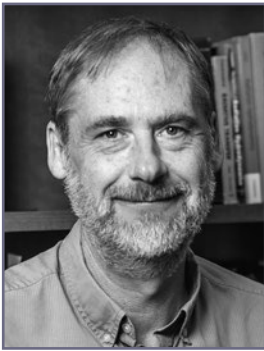
James Stone

Professor · Computational Astrophysics

James Stone has developed novel numerical algorithms that have shaped the field of computational astrophysics and ushered in a new era of precision simulations with a wide range of applications. Stone's research is focused on fluid dynamics, particularly magnetohydrodynamics, for which he has developed some of the most powerful and widely used astrophysical codes. He has contributed groundbreaking methods to address a few of the field's most challenging problems, resulting in foundational insights into the nature of giant molecular clouds, the evolution of accretion disks, the process of planetary migration, and the phenomena of radiation transport.
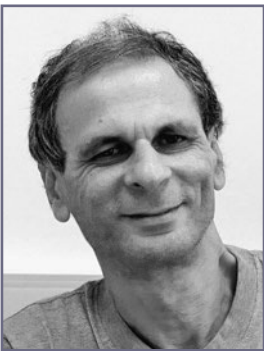
Michail Tsodyks

C.V. Starr Professor · Theoretical Neuroscience

Misha Tsodyks is a leading theoretical neuroscientist whose research has influenced important areas of neurobiology and the development of a quantitative understanding of brain functioning and human cognitive abilities. His work is focused on identifying neural algorithms that define functions of cortical systems and, in recent years, various aspects of cognitive behavior. From demonstrating the importance of sparsity in neural networks to providing deep insights into the mechanisms of short-term synaptic plasticity and working and associative memory, Tsodyks has devised conceptual models that make quantitative testable predictions for experiments.

Matias Zaldarriaga

Richard Black Professor · Astrophysics and Cosmology

Matias Zaldarriaga has made many influential and creative contributions to our understanding of the early universe, particle astrophysics, and cosmology as a probe of fundamental physics. Much of his work centers on understanding the clues about the earliest moments of our universe encoded in the Cosmic Microwave Background, the faint glow of radiation generated by the Big Bang, and in the distribution of matter in the late universe.
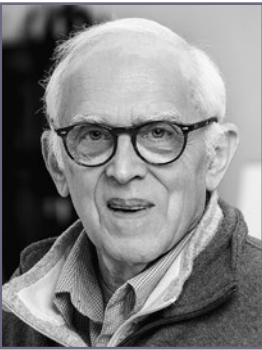
Stephen L. Adler

Professor Emeritus · Particle Physics

In a series of remarkable, difficult calculations, Stephen Adler demonstrated that abstract ideas about the symmetries of fundamental interactions could be made to yield concrete predictions. The successful verification of these predictions was a vital step toward the modern Standard Model of particle physics. In more recent work, he has been exploring generalized forms of quantum mechanics, both from a theoretical and a phenomenological standpoint. He has developed new algorithms for multidimensional integration, and is currently exploring a particle unification model based on boson-fermion balance without full supersymmetry, and a novel proposal for the "dark energy" that drives the accelerated expansion of the universe.
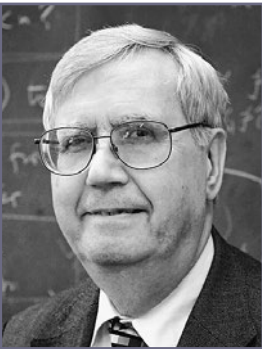
Peter Goddard

Professor Emeritus · Mathematical Physics

Peter Goddard's research concerns quantum field theory and string theory. With his collaborators, he has made pioneering contributions to these areas, in particular: the quantization of the relativistic string; the "no ghost theorem" of string theory; electric-magnetic duality in gauge theories; the construction of conformal field theories; and the realization of gauge symmetry in string theory. Before serving as the eighth Director (2004–12) of the Institute for Advanced Study, he was Master of St. John's College and Professor of Theoretical Physics in the University of Cambridge, England, where he played a leading role in establishing the Isaac Newton Institute for Mathematical Sciences and the University of Cambridge Centre for Mathematical Sciences.
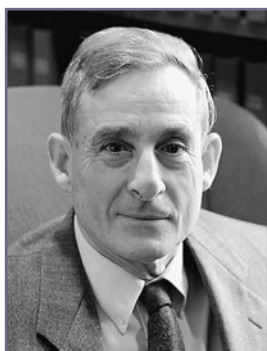
Peter Goldreich
Professor Emeritus · Astrophysics

Peter Goldreich has made profound and lasting contributions to planetary science and astrophysics, providing fundamental theoretical insights for understanding the rotation of planets, the dynamics of planetary rings, pulsars, astrophysical masers, the spiral arms of galaxies, oscillations of the sun and white dwarfs, turbulence in magnetized fluids, and planet formation. His current research is focused on the production of impact spherules.

Arnold J. Levine
Professor Emeritus · Biology

Arnold J. Levine is a widely acclaimed leader in cancer research. In 1979, Levine and others discovered the p53 tumor suppressor protein, a molecule that inhibits tumor development. He established the Simons Center for Systems Biology at the Institute, concentrating on research at the interface of molecular biology and the physical sciences. Recognizing the potential of convergence research in the life sciences, Levine has inaugurated a program of research collaborations, in partnership with Stand Up to Cancer (and others), that brings together quantitative scientists from theoretical physics, computer science, and mathematics, with biologists and clinicians, to develop novel approaches to solve important problems in cancer research. He also leads the NSF–sponsored Cancer Convergence Education Network, and focuses on fostering convergence research to produce fundamental insights in the areas of immunology and infectious diseases.

Scott Tremaine
Professor Emeritus · Astrophysics

Scott Tremaine has made seminal contributions to understanding the formation and evolution of planetary systems, comets, black holes, star clusters, galaxies, and galaxy systems. He predicted the Kuiper belt of comets beyond Neptune and, with Peter Goldreich, the existence of shepherd satellites and density waves in Saturn's ring system, as well as the phenomenon of planetary migration. He interpreted double-nuclei galaxies, such as the nearby Andromeda galaxy, as eccentric stellar disks, and elucidated the role of dynamical friction in galaxy evolution.

Edward Witten

Professor Emeritus · Mathematical Physics

Edward Witten's work exhibits a unique combination of mathematical power and physics insight, and his contributions have significantly enriched both fields. He has greatly contributed to the modern interest in superstrings as a candidate theory for the unification of all known physical interactions. Most recently, he has explored quantum duality symmetries of field theories and string theories, opening significant new perspectives on particle physics, string theory, and topology.

Kazuyuki Akitsu

Cosmology · Institute for Advanced Study

Kazuyuki Akitsu's research has utilized both analytic and numerical methods to focus on tidal effects arising from the initial conditions or the gravitational clustering in the cosmological structure formation. He is also interested in extracting cosmological signals hidden in the shape of galaxies.

Ignatios Antoniadis

Theoretical High Energy Physics · Laboratoire de Physique Théorique et Haute Energies, Sorbonne Université and CNRS · *s*
Funding provided by The Ambrose Monell Foundation

Ignatios Antoniadis is interested in the general area of string theory, from formal aspects to phenomenological applications in particle physics and cosmology.

Lev Arzamasskiy

Astrophysics · Institute for Advanced Study
Funding provided by Schmidt Futures

Lev Arzamasskiy uses analytical and numerical methods to study the basic plasma physics that occurs in various space and astrophysical systems, such as the solar wind, black hole accretion flows, and the intracluster medium of galaxy clusters.

Pinaki Banerjee

Theoretical Physics · Institute for Advanced Study

Pinaki Banerjee is broadly interested in various aspects of quantum field theory and gauge/gravity duality. His present research primarily focuses on modern on-shell scattering amplitudes and conformal field theories in diverse dimensions.

Sirio Belga Fedeli

Systems Biology · Institute for Advanced Study
Funding provided by the Simons Foundation

Sirio Belga Fedeli's research focuses on the mathematics of principles that govern cellular processes. Belga Fedeli's interests include collective behavior and dynamics of ecological systems.

SCHOOL OF NATURAL SCIENCES

f First Term · *s* Second Term · *m* Long-term Member · *v* Visitor
dvp Distinguished Visiting Professor · *jvp* Junior Visiting Professor · *ra* Research Associate

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Ruth Britto

Theoretical Physics · Trinity College Dublin
J. Robert Oppenheimer Visiting Professor

Ruth Britto studies Feynman integrals and scattering amplitudes in quantum field theory, focusing on mathematical properties leading to new approaches for computation.

Matthew Buican

Theoretical Physics · Queen Mary University of London · *v/f*

Matthew Buican studies non-perturbative aspects of quantum field theory. He is interested in exploiting new structures in 4D N=2 quantum field theories and shedding light on their full local operator algebras. He is also exploring natural transformations on topological field theories and studying connections with quantum computation.

Giovanni Cabass

Cosmology · Institute for Advanced Study
Giovanni Cabass's research focuses on the epoch of primordial infla-tion and what imprints it left on the distribution of galaxies and the low-redshift universe. Cabass is interested in developing effective field theory techniques to find what these imprints are, and then to con-strain them using observations of galaxy clustering.

Tankut Can

Physics, Neuroscience, Machine Learning · Institute for Advanced Study
Eric and Wendy Schmidt Member in Biology; additional funding provided by the Simons Foundation

Tankut Can is a theoretical physicist interested in cognition. His back-ground is in condensed matter, with an emphasis on random matrix theory and statistical physics. His current research applies these tools to study problems in machine learning and neuroscience.

Simon Caron-Huot

Theoretical Physics · McGill University · *f*

Simon Caron-Huot's research focuses on developing analytic tech-niques in quantum field theory, emphasizing self-consistency with general principles of quantum mechanics and relativity. During his stay at IAS, he plans to research nonperturbative constraints on the strong force and on gravity.

f First Term · *s* Second Term · *m* Long-term Member · *v* Visitor
dvp Distinguished Visiting Professor · *jvp* Junior Visiting Professor · *ra* Research Associate

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Venkatesa Chandrasekaran
Theoretical Physics · Institute for Advanced Study
Funding provided by the Simons Foundation

Venkatesa Chandrasekaran is broadly interested in general relativity and quantum field theory. His current research centers on edge modes in gravity and their role in understanding black hole entropy. His other primary focus is on the relationship between modular flow and the emergence of spacetime.

Stephen Chen
Cosmology · Institute for Advanced Study
Bezos Member

Stephen Chen is interested in the large-scale structure of the universe and studies its evolution and use to constrain fundamental physics, with an emphasis on perturbative methods. A particular recent interest has involved using these techniques in the arena of cross-correlations, which he plans to further develop at the Institute.

Sihao Cheng
Astrophysics · Institute for Advanced Study and Perimeter Institute for Theoretical Physics
Zurich Insurance Company Member

Sihao Cheng is interested in using statistical analysis to understand our universe, including topics in cosmology, stellar physics, and extrasolar planets. He is working on developing analytical tools inspired by neural networks and studying their connection to and applications in physics.

Horng Sheng Chia
Particle Physics, Astrophysics · Institute for Advanced Study

Horng Sheng Chia is broadly interested in black hole physics, gravitational-wave data analysis, and phenomenological aspects of particle physics. His current research focuses on analyzing the gravitational-wave signals from astrophysical sources in the LIGO-Virgo data. He is also interested in using these data to search for physics beyond the Standard Model.

Pratika Dayal
Theoretical Astrophysics · University of Groningen · *v/f*
Funding provided by the Bershadsky Fund

Pratika Dayal is interested in topics including galaxy formation, the nature of dark matter, and 21cm cosmology. While at IAS, she plans to work on these topics in physical cosmology.

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Lorenz Eberhardt
String Theory · Institute for Advanced Study · *m*
Marvin L. Goldberger Member; additional funding provided by the U.S. Department of Energy

Lorenz Eberhardt is interested in many areas related to two-dimensional conformal field theory. He is studying in particular the AdS3/CFT2 correspondence, worldsheet methods in string theory, W-algebras, and moonshine phenomena.

Isabel Garcia Garcia
Physics · Institute for Advanced Study and New York University
Funding provided by the National Science Foundation

Isabel Garcia Garcia's work in the field of theoretical physics covers a broad range of topics in particle phenomenology, with a special interest in the interplay between particle physics, gravity, and formal theory.

Chris Hamilton
Astrophysics · Institute for Advanced Study
Funding provided by the Simons Foundation

Chris Hamilton's research concerns the dynamics of galaxies, globular clusters, binary stars, and planetary systems; compact object mergers (LIGO/Virgo gravitational wave progenitors); and the kinetic theory of stellar systems and plasmas.

Holmfridur Hannesdottir
Theoretical Physics · Institute for Advanced Study
Funding provided by the Simons Foundation

Holmfridur Hannesdottir is interested in exploring the theoretical foundations of quantum field theory. By exploiting infrared divergences and constraints on the analytic structure, she probes properties of scattering amplitudes in perturbation theory.

Nathan Haouzi
Mathematical Physics · Institute for Advanced Study
Roger Dashen Member; additional funding provided by the National Science Foundation

Nathan Haouzi studies string theory and quantum field theory in various dimensions. Haouzi is particularly interested in the underlying mathematical structures that explain or motivate physical dualities. Some of his recent work explores new aspects of the BPS/CFT correspondence, and its relation to the representation theory of quantum groups.

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Matthew Heydeman

Theoretical Physics · Institute for Advanced Study and Princeton University
Funding provided by the U.S. Department of Energy and the Sivian Fund

Matthew Heydeman works at the interface of black holes in string theory, scattering amplitudes, and the AdS/CFT correspondence, especially in supergravity. A common theme is the use of physical dualities and mathematical techniques to find new connections between seemingly different physical systems.

Christopher Hirata

Astrophysics · The Ohio State University
Funding provided by The Ambrose Monell Foundation

Christopher Hirata's interests range from the early universe (inflation and the cosmic microwave background) to the late universe (large-scale structure and dark energy). Hirata is a theorist, but has a particular interest in statistics, data analysis, and collaboration with observational programs.

Hsiang-Chih Hwang

Astronomy · Institute for Advanced Study

Hsiang-Chih Hwang's research focuses on binary stars and binary quasars. He uses large astronomical surveys to understand the formation and evolution of binary stars in the Milky Way, including main-sequence stars, white dwarfs, and close and wide binaries. He is also developing a new astrometric method to search for sub-kpc binary quasars.

Nissan Itzhaki

Theoretical Physics · Tel Aviv University
Funding provided by the Adler Family Fund

Nissan Itzhaki studies string theory, black holes, and cosmology.

Mikhail M. Ivanov

Cosmology, Black Holes · Institute for Advanced Study
NASA Einstein Fellow

Mikhail M. Ivanov studies cosmological structure formation. He develops the first-principle theoretical description of gravitational clustering and uses it to extract new information about our universe from large-scale structure data. He is also interested in black hole physics and the effective field theory of inspiraling binaries.

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Mikhail Katkov

Neuroscience · Weizmann Institute of Science · *v/f*

Mikhail Katkov is interested in exploring how humans understand the outside world, through the lens of theories as well as experimentation in perception of low- to mid-level visual features and in memory for verbal material ranging from random lists to meaningful information.

Ahsan Z. Khan

Theoretical Physics · Institute for Advanced Study
William D. Loughlin Member; additional funding provided by the National Science Foundation

Ahsan Khan is interested in algebraic and categorical structures that govern universal phenomena in quantum field theory. Building on the mathematical structures that govern boundary conditions in two-dimensional topological field theories, Khan is developing analogous notions for higher dimensional topological field theories, along with theories of a mixed topological-holomorphic nature.

Jorrit Kruthoff

Theoretical Physics · Institute for Advanced Study
Funding provided by the National Science Foundation

Jorrit Kruthoff's research focuses on non-perturbative aspects of quantum gravity and holography. He uses low-dimensional models of gravity to shed light on various aspects of black holes, such as their interior and their microstates.

Jonah Kudler-Flam

Theoretical Physics · Institute for Advanced Study
Funding provided by the National Science Foundation and the Paul Dirac Fund

Jonah Kudler-Flam is interested in quantum information-theoretic aspects of quantum many-body physics and gravity. His research focuses on chaos and thermalization in quantum systems and, in parallel, the quantum physics of black holes.

Nicolas Lenner

Biophysics, Ecology, Evolution · Institute for Advanced Study
Martin A. and Helen Chooljian Member in Biology; additional funding provided by the Simons Foundation

Nicolas Lenner's scientific background is in physics of dynamical biological systems, ranging from molecular dynamics to developmental processes of whole organisms. Lenner now applies this dynamical systems perspective to problems in ecology and evolution.

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Itai Linial

Theoretical Astrophysics · Institute for Advanced Study and Columbia University

Itai Linial is interested in a broad range of theoretical topics in astrophysics, including high-energy transient phenomena and dynamical processes occurring near supermassive black holes in centers of galaxies and sources of gravitational waves.

Stephen Lubow

Astrophysics · Space Telescope Science Institute, Baltimore · *f*

Stephen Lubow works on the theory of planet formation, binary stars, and accretion disks around young stars.

Jan Manschot

Theoretical Physics · Trinity College Dublin
Funding provided by The Ambrose Monell Foundation

Jan Manschot's research considers the dynamics of quantum field theory, gravity, and string theory. He has made contributions in the structure of supersymmetric states, and the manifestation of electric-magnetic duality through modularity. He is currently working on topological quantum field theories using effective field theory.

Dalimil Mazac

Quantum Field Theory · Institute for Advanced Study
Founders' Circle Member, in recognition of Edward and Kiyomi Baird; Funding provided by the U.S. Department of Energy

Dalimil Mazac studies how quantum field theory and quantum gravity are constrained by their internal consistency. He has been developing analytic approaches to the conformal bootstrap.

Anupam Mazumdar

Theoretical Physics · University of Groningen · *v/f*

Anupam Mazumdar is interested in tests of quantum gravity in a tabletop experiment, creating massive Schrödinger cat states in a laboratory, particle cosmology, and classical and quantum gravity.

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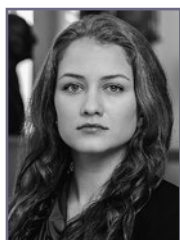
Lia Medeiros

Astrophysics · Institute for Advanced Study
AMIAS Member

Lia Medeiros is interested in using extreme astrophysical objects and phenomena to test fundamental theories of physics. Currently, she works on several aspects of the Event Horizon Telescope. Her work primarily focuses on theoretical simulations, but she will sometimes delve into data analysis as well.

Victor Mikhaylov

Biology · Institute for Advanced Study · *ra*

Victor Mikhaylov works in mathematical physics and biology, focusing on supersymmetric and topological quantum field theories, and the application of modern methods of data analysis to bioinformatical problems.

Sebastian Mizera

Theoretical Physics · Institute for Advanced Study · *m*
Funding provided by the U.S. Department of Energy and the Sivian Fund

Sebastian Mizera's work focuses on aspects of scattering amplitudes in quantum field theory and string theory, as well as their relation to geometry and topology.

Gianluigi Mongillo

Systems Biology · Sorbonne Université
Charles L. Brown Member in Biology; additional funding provided by the Simons Foundation

Gianluigi Mongillo is a theoretical physicist interested in the quantitative understanding of the structure and dynamics of biological neuronal networks. His current research focuses on (1) the impact of the spatial organization of synaptic afferents on a single neuron's integrative properties, and (2) the relationship between synaptic properties and memory storage.

Elias Most

Theoretical Astrophysics · Institute for Advanced Study and Princeton University

Elias Most's research focuses on fundamental physics in the presence of strong gravity associated with compact objects. As a computational astrophysicist, he performs numerical relativity simulations of merging neutron star binaries to elucidate the imprint of fundamental properties of the system on different observational channels.

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Sunil Mukhi

Quantum Fields, Gravitation, String Theory · Indian Institute of Science Education and Research, Pune · *v/f*

Sunil Mukhi works on theoretical and mathematical aspects of quantum field theory and gravitation. His interests are the classification of two-dimensional conformal theory and the study of three-dimensional gravity, as well as the fundamentals of string and M-theory, the path integral formulation of quantum gravity, and the mathematics and physics of black holes.

Patrick Dean Mullen

Astrophysics · Institute for Advanced Study and Center for Computational Astrophysics

Patrick Dean Mullen's research focuses on the development and application of numerical tools for astrophysical magnetohydrodynamics. Mullen has performed cutting-edge numerical simulations of the planetary scale, giant impact thought to have formed Earth's moon.

Kohta Murase

Astroparticle Physics · The Pennsylvania State University

J. Robert Oppenheimer Visiting Professor

Kohta Murase investigates the origins of high-energy cosmic particles and underlying physical mechanisms. He aims to reveal extreme astrophysical phenomena related to black holes and neutron stars in light of multimessenger astrophysics. He is also interested in exploring novel probes of dark matter and physics beyond the Standard Model.

Tomohiro Ono

Astrophysics and Computational Science · Institute for Advanced Study

Tomohiro Ono's research focuses on planet formation and numerical algorithms for astrophysical magnetohydrodynamic simulations. While at IAS, he will work on the improvement and optimization of the Athena++ code.

Leopoldo Pando Zayas

AdS/CFT Correspondence, Quantum Black Holes · University of Michigan

IBM Einstein Fellow

Leopoldo Pando Zayas is interested in aspects of microscopic counting for the entropy of asymptotically AdS black holes using the corresponding dual field theories. While at IAS, Pando Zayas plans to continue the study of quantum corrections to the entropy of black holes.

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Matteo Parisi

High Energy Physics, Combinatorics · Institute for Advanced Study and Harvard University
Funding provided by the U.S. Department of Energy

Matteo Parisi's research lies at the intersection of high-energy physics and combinatorics. His work focuses on novel combinatorial aspects of scattering amplitudes in quantum field theories, in relation to the (positive) Grassmannian, amplituhedra, tropical geometry, and cluster algebras.

Geoff Penington

Theoretical Physics · University of California, Berkeley · *jvp*

Geoff Penington works on the connections between quantum information theory and quantum gravity. In particular, he is interested in understanding how information escapes from evaporating black holes.

Robert Penna

Theoretical Physics · Institute for Advanced Study · *v*

Robert Penna is interested in general relativity and mathematical physics. His recent research has focused on using infinite dimensional symmetries of general relativity to learn new things about black holes and gravitational waves.

Martin Pessah

Theoretical Astrophysics · Niels Bohr Institute, University of Copenhagen

Martin Pessah is interested in a range of areas in theoretical astrophysics, including dust dynamics and planet formation in protoplanetary disks, accretion flows feeding black holes, and the dilute plasma permeating galaxy clusters. His current interests include problems related to gravitational wave astrophysics and tidal disruption events.

Annika Peter

Astrophysics · The Ohio State University
Funding provided by The Ambrose Monell Foundation

Annika Peter is a dark matter astrophysicist, working on theoretical and observational signatures of dark matter in the cosmos. During her IAS visit, she plans to learn more about plasma astrophysics, and work on theoretical and observational aspects of dwarf galaxy-dark matter halo connections.

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Massimo Porrati

Physics · New York University · *f*

Massimo Porrati is interested in string theory, supersymmetry and supergravity, nonperturbative dynamics of strings, and field theory.

Abhinav Prem

Theoretical Physics · Institute for Advanced Study
Funding provided by the U.S. Department of Energy and the Sivian Fund

Abhinav Prem primarily works on topological states of matter, including symmetry-protected and fractonic phases, and on the dynamics of strongly interacting quantum systems, both in and out of equilibrium.

Roman Rafikov

Astrophysics · University of Cambridge · *v*

Roman Rafikov works in the areas of planetary sciences, planet formation, N-body dynamics, fluid dynamics, accretion disks, and high-energy astrophysics.

Carolyn Raithel

Astrophysics · Institute for Advanced Study and Princeton University
John N. Bahcall Fellow

Carolyn Raithel is interested in using astrophysical observations of neutron stars to study the properties and interactions of matter at extreme densities. Her current research focuses on the gravitational waves emitted during neutron star mergers, using a mix of analytic theory and numerical simulations.

Riccardo Rao

Systems Biology · Institute for Advanced Study
Starr Foundation Member in Biology; additional funding provided by the Simons Foundation

Riccardo Rao's research focuses on using the framework of thermodynamic models to investigate specific classes of chemical reaction networks, such as metabolic networks.

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Bart Ripperda

Theoretical Astrophysics · Institute for Advanced Study
NASA Hubble Fellow

Bart Ripperda is a theoretical astrophysicist trying to connect fundamental plasma physics with observations of high-energy emission from black holes and neutron stars. While at IAS, Bart will study the plasma physics of these compact objects by using a novel combination of general-relativistic kinetic simulations and magnetohydrodynamics models.

Daniel Roggenkamp

Theoretical Physics · Universität Mannheim

Daniel Roggenkamp is interested in mathematical structures arising in quantum field theories. Defects are one focus of his research.

Phil Saad

Theoretical Physics · Institute for Advanced Study
Funding provided by the National Science Foundation

Phil Saad's research focuses on understanding signatures of quantum microstructure in quantum gravity, especially in the context of black holes. Saad uses simple toy models and techniques from the study of quantum chaos to shed light on these problems.

Kailash Sahu

Astrophysics · Space Telescope Science Institute, Baltimore
Funding provided by The Ambrose Monell Foundation

Kailash Sahu's research efforts have focused on applying microlensing, transit, and relativistic deflection techniques to study exoplanets, nearby stars, and black holes. He recently reported the first unambiguous detection of a stellar-mass black hole, and measured its mass.

Sophie Lund Schrøder

Astrophysics · Institute for Advanced Study
Friends of the Institute for Advanced Study Member

Sophie Lund Schrøder uses numerical methods and analytic modeling to study high-energy astrophysical phenomena and especially evolution of stellar binaries. She is interested in the impact of hydrodynamical interactions on orbiting binaries and populations of gravitational wave sources.

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Sahand Seifnashri
Theoretical Physics · Institute for Advanced Study
Funding provided by the U.S. Department of Energy and the Sivian Fund
Sahand Seifnashri works on quantum field theory and its applications in high-energy and condensed matter physics. He is interested in generalized symmetries, their anomalies, and understanding the structures of extended operators and defects in quantum field theory.

Alessandro Sfondrini
Theoretical Physics · Università degli Studi di Padova · *f*
Alessandro Sfondrini is doing research in quantum field theory and string theory using exact techniques from the theory of integrable models and conformal field theory.

Wilbur Shirley
Theoretical Physics · Institute for Advanced Study
Funding provided by the Simons Foundation
Wilbur Shirley works at the intersection of condensed matter physics and quantum information. He is interested in topological, fractonic, and critical states of matter.

S. Josephine Suh
Theoretical Physics · Institute for Advanced Study and Princeton University · *v*
Josephine Suh is interested in developing approaches to quantum gravity based on quantum many-body physics and quantum dynamics.

Gustavo Joaquin Turiaci
Theoretical Physics · Institute for Advanced Study
Funding provided by the National Science Foundation and the Sivian Fund
Gustavo Joaquin Turiaci is interested in the interplay between quantum mechanics and gravity. He has worked on low-dimensional gravity and Sachdev-Ye-Kitaev models, quantum chaos, near-extremal black holes, and conformal field theory more broadly.

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Digvijay Wadekar

Gravitational Waves, Dark Matter, Cosmology · Institute for Advanced Study

Funding provided by the W. M. Keck Foundation Fund

Digvijay Wadekar currently works on data analysis of gravitational waves, and on probing non-standard dark matter using dwarf galaxies. In the past, he worked on analytic and machine learning applications to galaxy and SZ-CMB surveys.

Xiao-Gang Wen

Theoretical Condensed Matter Physics · Massachusetts Institute of Technology

IBM Einstein Fellow

Xiao-Gang Wen is interested in gapped quantum many-body systems. He introduced topological order (1989) and SPT order (2009) to characterize them. Their boundaries have gravitational anomalies and/or symmetry anomalies. Their low-energy sector can have emergent (anomalous, higher, non-invertible) symmetries. Now, he is starting to work on gapless systems.

George Nathaniel Wong

Astrophysics · Institute for Advanced Study and Princeton University

Frank and Peggy Taplin Member

George Nathaniel Wong uses numerical methods and analytic modeling to study high-energy astrophysical phenomena and especially accretion onto supermassive black holes. He is interested in predicting observational signatures of the connection between black holes and relativistic jets as might be observed by next-generation experiments.

Siyao Xu

Magnetohydrodynamic Turbulence, Turbulent Dynamo · Institute for Advanced Study

NASA Hubble Fellow

Siyao Xu studies the fundamental physics of magnetohydrodynamic (MHD) turbulence, turbulent dynamo, and particle transport in MHD turbulence. The theoretical findings are applied to studying diverse astrophysical problems, including cosmic rays, (first) star formation, magnetic reconnection, and particle acceleration in high-energy astrophysical environments.

Tomer Yavetz

Astrophysics · Institute for Advanced Study

Corning Glass Works Foundation Fellowship

Tomer Yavetz is interested in applying the tools of theoretical dynamics in order to understand a variety of phenomena, ranging from the orbits of Earth satellites to the nature of dark matter. His main focus is on studying the distribution and substructure of dark matter in the Milky Way.

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Muni Zhou
Plasma Physics · Institute for Advanced Study and Princeton University
Muni Zhou uses a combination of analytic theory and numerical experiments to study plasma physics problems such as magnetogenesis, plasma dynamos, and kinetic turbulence.

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School of Social Science

Administrative Officer: Miriam Harris

FOUNDED IN 1973, THE SCHOOL OF SOCIAL SCIENCE takes as its mission the analysis of contemporary societies and social change. It is devoted to a pluralistic and critical approach to social research, from a multidisciplinary and international perspective. Operating under the guiding principles of informality and collegiality, and with a shared understanding that the social sciences are not to be narrowly defined, the School brings together scholars with various perspectives, methods, and topics, providing space for intellectual debate and mutual enrichment. Scholars are drawn from a wide range of fields, notably political theory, economics, law, psychology, sociology, anthropology, history, philosophy, and literature, to examine historical and contemporary problems.

Each year, the School designates a theme, which is neither exclusive nor excluding. The theme for the 2022–23 academic year is "Climate Crisis Politics," led by Wendy Brown, UPS Foundation Professor at the Institute for Advanced Study, and Timothy Mitchell, William B. Ransford Professor of Middle Eastern, South Asian and African Studies at Columbia University, in collaboration with Didier Fassin, James D. Wolfensohn Professor, and Alondra Nelson, Harold F. Linder Professor, both at the Institute for Advanced Study.

The climate crisis generates novel political questions and predicaments. The novelty arises from the crisis's emergency quality, its global dimensions yet unequally distributed effects, and its severe indictment of existing ways of human life. The crisis challenges conventional formulations of justice, freedom, sovereignty, progress, belonging and even understandings of humanity, ontology, historiography, temporality, power, and generational and collective responsibility. It raises questions about disciplinarity, methods and modeling, about realism and incrementalism, about nation-states, capitalism, colonialism and technology. How do these challenges and questions reorient twenty-first century political, social and economic thought and practice? What kinds of theory meet these challenges?

The climate crisis also raises concrete questions for social scientists. There are issues of political economy: Is sustainable capitalism oxymoronic? Can capitalism's dependence on fossil fuels and growth in consumption be eliminated (in

time)? Can renewable energy sources avoid new depredations of vulnerable peoples and places, such as those entailed in extracting rare earth minerals? Can "pricing nature" and other market instruments stem the crisis and yield climate justice? What are the alternatives? There are issues of power and rule: What are the most effective governing levels (global, regional, national or subnational) and forms (autocratic, technocratic or democratic) for addressing the crisis? What are the roles of non-governmental entities, such as banks, corporations and social movements? Can anti-democratic "global government" be avoided while achieving significant global agreements and cooperation? How can legacies of imperialism, colonialism, and unequal development be redressed rather than reinforced in responses to the climate emergency? What are the virtues and limitations of decentralized responses, such as shutting down extractivist industries or establishing stringent local standards? Can these be effectively "scaled up" or multiplied?

The theoretical and concrete questions above are suggestive and do not exhaust the concerns of the year-long seminar on climate crisis politics.

Wendy Brown
UPS Foundation Professor

Wendy Brown is a political theorist who works across the history of political thought, political economy, Continental philosophy, cultural theory, and critical legal theory. Brown investigates the subterranean powers shaping contemporary Euroatlantic polities, with particular attention to the political identities, subjectivities, and expressions they spawn. Across her work, Brown aims to illuminate powers unique to our era and the predicaments they generate for democratic thought and practice.

Didier Fassin
James D. Wolfensohn Professor

An anthropologist and a sociologist who has conducted fieldwork in Senegal, Ecuador, South Africa, and France, Didier Fassin was initially trained as a physician in internal medicine and public health. He later developed the field of critical moral anthropology, which explores values and affects involved in judgment and action as well as policies and politics. His recent work is on the theory of punishment, the politics of life, and the public presence of the social sciences. Recipient of the Nomis Distinguished Scientist Award, he is currently involved in a global program on crises, examining, in particular, the cases of migrants and refugees. Fassin is newly elected to the chair, Moral Questions and Social Issues, at the Collège de France, where he will give a series of twelve lectures on The Trials of the Border in 2023.

Alondra Nelson
Harold F. Linder Professor

An acclaimed sociologist, Alondra Nelson explores questions in science, technology, and social inequality. Nelson's work offers a critical and innovative approach to the social sciences in fruitful dialogue with many disciplines. Her major research contributions are situated at the intersection of racial formation and social citizenship, on the one hand, and emerging scientific and technological phenomena, on the other. Nelson is on public service leave from the Institute for Advanced Study, serving as Deputy Assistant to the President for Science and Technology Policy, and performing the duties of the Director of the White House Office of Science and Technology Policy (OSTP). In this capacity, she brings social science expertise explicitly into the work of federal science and technology strategy and policy.

Joan Wallach Scott
Professor Emerita

Joan Scott's groundbreaking work has challenged the foundations of conventional historical practice, including the nature of historical evidence and historical experience and the role of narrative in the writing of history. Broadly, the object of her work is the question of difference in history: its uses, enunciations, implementations, justifications, and transformations in the construction of social and political life. Scott's recent books have focused on the vexed relationship of the particularity of gender to the universalizing force of democratic politics.
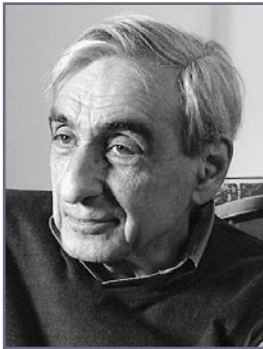
Michael Walzer
Professor Emeritus

One of America's foremost political thinkers, Michael Walzer has written about a wide variety of topics in political theory and moral philosophy, including political obligation, just and unjust war, nationalism and ethnicity, economic justice, and the welfare state. He has played a critical role in the revival of a practical, issue-focused ethics and in the development of a pluralist approach to political and moral life. Walzer's books include *Just and Unjust Wars* (1977), *Spheres of Justice* (1983), *On Toleration* (1997), *Arguing About War* (2004), and *The Paradox of Liberation* (2015); he served as co-editor of the political journal *Dissent* for more than three decades, retiring in 2014. Currently, he is working on issues having to do with international justice and the connection of religion and politics, and also on a collaborative project focused on the history of Jewish political thought.

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Lila Abu-Lughod

Anthropology, Gender Studies · Columbia University · *v*

Lila Abu-Lughod is interested in anthropology and gender politics in/of the Arab and Muslim world. She has focused on questions of representation and ethics; the cultural politics of poetry, media, and museums; and the international circulation of rights discourses. She will be working on "Acknowledgments: Making an Anthropologist."

Lorenzo Alunni

Anthropology · Institute for Advanced Study
Wolfensohn Family Member

Lorenzo Alunni is inquiring into the corporeal experience of borders. His research examines how bodies shape and are shaped by borders, and the role healthcare plays in this process. While at IAS, Alunni will work on a book about his ethnography on the island of Lampedusa and other crucial sites of European bordering practices.

Hillary Angelo

Sociology · University of California, Santa Cruz

Hillary Angelo is an urban and environmental sociologist whose work includes historical and contemporary research on urban greening, sustainability planning and policy, infrastructure, and climate change. At IAS, she will be working on a book on public lands and the energy transition.

Alyssa Battistoni

Political Theory · Barnard College

Alyssa Battistoni is a political theorist with research interests in climate and environmental politics, Marxism, feminism, and the history of political and economic thought. At IAS, she is completing a book on the free gifts of nature and the problem of non–value in capitalism.

David Bond

Anthropology and the Environment · Bennington College · *v*

David Bond investigates how the American Empire of Oil ends, with an aim of making a contribution in that direction. His current book project joins a struggle to close an oil refinery in the U.S. Virgin Islands, a fight that productively holds together colonial histories of profitable neglect and catastrophic futures of planetary instability.

Heather Davis

Cultural Studies · Eugene Lang College of Liberal Arts, The New School

Heather Davis is interested in how the saturation of fossil fuels has shaped contemporary culture. While at IAS, she will begin a new project that investigates how the construction of modern, Western time relied upon fossil fuels, and how that sense of temporality is now coming undone through the effects of climate change.

Anne-Claire Defossez

Sociology · Institute for Advanced Study · *v*

Anne-Claire Defossez will be writing a book on women and politics in France. Defossez will also work on field data collected on the French-Italian border regarding migrations from African and Middle Eastern countries to analyze their legal, social, and economic features, and the tensions between states' repression and local solidarity.

Julia Dehm

Law · La Trobe University · *s*

Julia Dehm's research addresses international climate change and environmental law, natural resource governance and questions of human rights, economic inequality and social justice. Her project "Accounting for Carbon" asks what sorts of accounting techniques are adequate for holding those responsible for causing the climate crisis to account.

Christina Dunbar-Hester

Science and Technology Studies, Communication · University of Southern California

Christina Dunbar-Hester's project at IAS centers on supply chain, pollution, and climate contestations, examining Los Angeles Harbor's commercial shipping and petroleum infrastructures as a local manifestation of labyrinthine global systems.

Stefan Eich

Political Theory · Georgetown University
Richard B. Fisher Member

Stefan Eich's research is in political theory and the history of political thought, with a focus on the political theory of money, economic democracy, and questions of time and temporality. While at IAS, he will primarily be working on a book project on the political thought of John Maynard Keynes.

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Samera Esmeir

Law, Politics, Middle East Studies · University of California, Berkeley

While at IAS, Samera Esmeir will be working on "The Struggle that Remains: Between World and International." Thinking with the histories and the present of Palestinian struggle, Esmeir tracks the modern entry of the word "international" into legal and political lexicons and theorizes its reconfiguration of horizons of struggle.

Andreas Folkers

Sociology, Critical Theory, Science and Technology Studies

Andreas Folkers is a sociologist who works on bio- and technopolitics, political ecology and economy from a social theory and STS perspective. At IAS, he will be working on a book project on the rise, fall, and afterlife of the cataclysmic ligature of modernity and fossil matters like coal, oil, and gas.

Kian Goh

Urban and Environmental Planning · University of California, Los Angeles
AMIAS Member

Kian Goh investigates the spatial politics of urban climate change responses, with fieldwork sites in cities in the United States, Southeast Asia, and Europe. While at IAS, Kian Goh will research the implications of the global climate justice movement for more equitable and sustainable cities.

Saygun Gökarıksel

Anthropology · Bosphorus University

Saygun Gökarıksel's research focuses on the themes of revolution, violence, law, justice, and neoliberal and rightwing authoritarianism in the South and East. While at IAS, he will be working on a book that explores the legal and moral-political reckoning with the communist past in Poland and the European East.

Heba Gowayed

Sociology · Boston University

Heba Gowayed's research examines how race and gender intersect to shape the lives and possibilities of people crossing borders. At IAS, she is working on her second book project, "The Cost of Borders," which theorizes borders as a costly and often deadly transaction.

Maira Hayat

Anthropology · University of Notre Dame

Maira Hayat's research articulates anthropology, environmental studies, public administration, and law, to examine a postcolonial "politics of provision" of public goods. Her current book project shows how Pakistan's plans for postcolonial modernity are crafted with water and sustained by everyday bureaucratic labor.

Lynne Huffer

Philosophy, Environmental Studies · Emory University

While at IAS, Lynne Huffer will work on her book-length project, "The Ethics of Extinction." Her book builds on traditions of interdisciplinary experimentation in philosophy, poetry, and the visual arts to reconfigure ethics as a question whose stakes are the existence of species.

Natasha Iskander

Climate Change and the Future of Work · New York University
Friends of the Institute for Advanced Study Member

While at IAS, Natasha Iskander is using material analysis of low-carbon concrete to look at climate change and the future of work. She explores how labor, immigration, and racial politics shape the adoption of strategies to slow global warming.

Adil Hasan Khan

Human Rights, Jurisprudence, Legal Histories · Melbourne Law School · *v/s*

Adil Hasan Khan will be completing a monograph titled "Learning International Laws of the South." It describes an encounter between a pluralist Islamic Indo-Persian tradition of international laws and an emergent colonial modern tradition of international law. The narrative is emplaced in South Asia and focuses on rival practices of legal education.

Jan Kiely

Modern Chinese History · Chinese University of Hong Kong · *v/s*

Kiely is researching local, quotidian, religious, family, health, performative, and justice practices and expressions as a means to examine the marginalization of particular rural communities over the course of the twentieth century.

Philippe Le Billon
Political Ecology · The University of British Columbia

Philippe Le Billon is a political ecologist working on the environment, development, and security nexus. His research engages with framings of nature, resource governance, and environmental justice. While at IAS, Le Billon will examine the interplay of resource extraction and climate crisis politics.

Jennifer Lee
Sociology
Robbert Dijkgraaf Member

Since the onset of COVID-19, one in six Asians in the United States has experienced a hate incident. While at IAS, Jennifer Lee will work on a book in which she links the present to the past, showing how this current moment of anti-Asian racism reflects an under-recognized legacy of xenophobia, misogyny, and exclusion that is embedded in our laws, institutions, and history of science and medicine.

Minhua Ling
Anthropology

Minhua Ling's research focuses on the ramifications of migration and urbanization. While at IAS, she will examine, through the lens of food, the lived experiences of socioecological transformation in rural China and address health and environmental inequalities facing village children amid massive migration and state-led urbanization.

Nayanika Mathur
Anthropology · University of Oxford

Nayanika Mathur teaches anthropology and South Asian studies. Her research at IAS is centered on how the climate crisis requires a rethinking of the methods of anthropology as a discipline. This project emerges from—and is rooted in—her longstanding research in the Indian Himalaya.
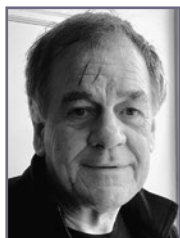
Timothy Mitchell
Political Theory, Middle Eastern Studies · Columbia University · *dvp*

Timothy Mitchell's interests include the politics of energy and the history of economic ideas. He is currently studying the two-hundred-year history of mechanisms for extracting income from the future—a future we inhabit precariously today. At IAS, he will be co-leading the School of Social Science theme seminar on Climate Crisis Politics.

Jonathan Morduch

Economics · New York University · *v*

Jonathan Morduch is interested in relationships between inequality, poverty, and finance. While at the Institute, Morduch is developing a framework for incorporating instability into understandings of poverty, and he is working on the design of experiments to assess the external validity of randomized controlled trials.

Catalina Muñoz

History, Transitional Justice, Colombia · Universidad de los Andes · *f*

Catalina Muñoz is interested in integrating the knowledge and skills of historians with the critical thinking and practice of transitional justice in Colombia. While at IAS, she will study historians' interventions in transitional justice processes around the globe, comparing forms of engagement and theoretical assumptions behind them.

Nicholas Occhiuto

Sociology · *v*

Nicholas Occhiuto is an economic sociologist whose research interests include corporate political activity, work and occupations, and public policy. While at IAS, he will be working on a project that explores the work of lobbyists in Washington, D.C., and the production of political inequality in the United States.

K-Sue Park

Race, Law, and History · Georgetown University Law Center
Roger W. Ferguson, Jr., and Annette L. Nazareth Member

K-Sue Park's scholarship examines the development of American property law and the creation of the American real estate market through the histories of colonization and enslavement. While at IAS, she will be working on a book on the history of the land system and how it produced a racialized society in America.

Sara Pursley

History · New York University

Sara Pursley's research focuses on how experiences of time, space, and selfhood were reconfigured in twentieth-century Iraq, including through political insurgencies and in projects of economic development. At IAS, she will be working on a book rethinking Iraq's formation in the 1920s through the interplay of insurgency and law.

SCHOOL OF SOCIAL SCIENCE

J.T. Roane

Black Studies, Black Ecologies · Rutgers University–New Brunswick

J.T. Roane recently completed a forthcoming book that shows how Black communities built a significant if under-appreciated terrain of geographic struggle shaping Philadelphia between the Great Migration and Black Power. At IAS, he will work on a new project about the political ecology of fire and social incineration from 1980 to 1995 in Philadelphia.

Matthew Salganik

Sociology · Princeton University
Infosys Member

Matthew Salganik is interested in computational social science and social networks. While at IAS, he will be doing research about the limits of machine learning for making predictions about social systems, in terms of both individual outcomes (i.e., what is going to happen to a specific person) and collective outcomes (i.e., onset of war).

SCHOOL OF SOCIAL SCIENCE

Program in Interdisciplinary Studies

The Program in Interdisciplinary Studies explores different ways of viewing the world, spanning a range of disciplines from physics and astrophysics, geology, paleontology, and biology, to artificial intelligence, cognitive psychology, and philosophy. The most recent interdisciplinary focus is on questions related to the origins and nature of cognition. The program is headed by Professor Piet Hut.

FACULTY

Piet Hut
Professor

Piet Hut is head of the Program in Interdisciplinary Studies at IAS. The program's main research theme is "the Nature of Reality," as seen through the lenses of Math, Matter, and Mind. Some subthemes are: for Math, "Algorithms and Foundations"; for Matter, "Physics and Biology"; and for Mind, "Phenomenology and Contemplation." Hut's main research background is in computational astrophysics, with asteroid "17031 Piethut" named in his honor. He is one of the co-founders of the Earth-Life Science Institute at the Tokyo Institute of Technology. His current book projects include "a Typology of Novelty" and "Rekindling Natural Philosophy."

VISITORS
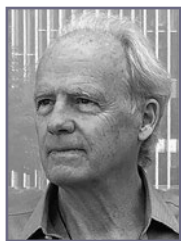
Stephen Burlingham
Art and Science

Stephen Burlingham uses visual arts as a medium to explore awareness through a focus on the tangible-intangible divide. Central for him is the paradox that our experience of self and world is sculpted equally by the seen and the unseen. His current project is a TV series on the question of "What Is Consciousness?" and the many people throughout history who have tried—and are still trying—to answer it.

Erica A. Cartmill
Anthropology, Psychology · University of California, Los Angeles

Erica A. Cartmill studies the acquisition and evolution of human language. Her work links biological and linguistic theory, and involves both comparative and developmental approaches to communication. She is the co-founder and co-director of the Diverse Intelligence Summer Institute, an interdisciplinary exploration of the diversity and nature of the mind across biological and artificial worlds.

Will Cavendish
Science Communication

Will Cavendish is a mathematician and filmmaker interested in how scientific and mathematical knowledge is communicated both between experts and to the public. His current film project explores the ideas of John Horton Conway.

Justin Clarke-Doane
Metaethics, Metaphysics, Epistemology, Philosophy of Logic & Mathematics

Justin Clarke-Doane's work at IAS will focus on metaphysical and epistemological problems surrounding apparently a priori (or 'armchair') inquiry, like mathematical, logical, modal and evaluative inquiry. Clarke-Doane hopes to complete a manuscript on the philosophy of logic, and another on the role of a priori inquiry in physical science.

Jacob Gates Foster
Computational Social Science, Collective Intelligence · University of California, Los Angeles

Jacob Gates Foster aims to understand how complex wholes become smarter than their parts. He uses tools from machine learning and complexity science to study the social production of collective intelligence, the evolutionary dynamics of ideas and institutions, and the relationship between culture and cognition. He blends computational and mathematical techniques with insights from science studies and social theory to clarify key ideas and develop new conceptual frameworks.

Rush Holt
Science and Society

Rush Holt is interested in understanding the appropriate place of science in a democratic society and is considering how society can attain that position.

Eiko Ikegami
Historical Sociology · The New School

Eiko Ikegami specializes in the historical sociology of Japan. At IAS, she will work on her research program on the various forms of diverse intelligence generally, and her digital research on autistic individuals in virtual worlds. Central to her project is the use of avatars in virtual environments and the virtual ethnography that allows her to access the experiences and worldviews of autistic adults.

Alexander A. Kaurov

Astrophysics, Sociology, Science Communication · Institute for Advanced Study

Alexander A. Kaurov's research interests range from astronomy and astrophysics to data-driven sociology. At IAS, he explores novel means of engaging the public in science and studies their effectiveness.

Tim Lenton

Earth Sciences, Climate · University of Exeter

Tim Lenton researches the 'Earth system'—the complex web of biological, geochemical and physical processes that has shaped atmosphere and ocean composition and climate, over Earth's entire history. His award-winning work identifying Tipping Points in the climate system has led him to apply the concept to tip positive action on climate change.

Jun Makino

Astrophysics, Computational Science · Kobe University

Jun Makino is working on stellar dynamics of globular clusters, galactic dynamics, and planet formation, using mainly large-scale numerical simulations. He is also working on numerical methods for these simulations, parallel computing schemes, and developments of specialized and general-purpose computers for simulations in these areas and other fields.

Barnaby Marsh

Choice Behavior, Decision Making · Harvard University

Barnaby Marsh's work looks at decision making in complex situations, particularly risk-taking, to advance the understanding of choice behavior and how knowledge and understanding become wisdom.

Michael Th. Rassias

Mathematical Analysis, Analytic Number Theory · Universität Zürich

Michael Th. Rassias's research interests lie in mathematical analysis, analytic number theory, and more specifically in exponential/trigonometric sums, zeta functions, approximation theory, functional equations, and analytic inequalities. He is also interested in the distribution of prime numbers, the analytic investigation of elliptic curves, and cryptography.
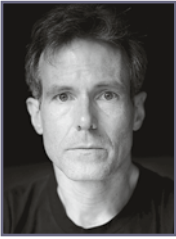
D. Eric Smith

Origin of Life · Georgia Institute of Technology and Tokyo Institute of Technology

Eric Smith studies the origin of life from the perspectives of biochemistry, microbiology, geochemisty, and statistical physics.

Edwin L. Turner

Astrophysics · Princeton University

Edwin L. Turner is working on statistical biases and estimators for samples of exoplanets, the Strategic Exploration of Exoplanets and Disks with Subaru project, and implications of complexity in cellular automata systems for the limits of reductionism, as well as related topics in the philosophy of science.

Mark van Atten

Philosophy of Logic and Mathematics, Phenomenology, Idealistic Philosophy · Archives Husserl de Paris, CNRS

Mark van Atten is working to build bridges between Brouwer's intuitionism in mathematics, Husserl's phenomenology, and contemplative traditions.

Harald Wiltsche

Philosophy of Science · Linköping University

Harald Wiltsche is a philosopher working at the intersection between philosophy of science, epistemology, and phenomenology. What interests Wiltsche is how bodily-, socially-, and historically-situated subjects gain knowledge about reality by means as diverse as thought experiments, mathematical models, or scientific instruments.

Director's Visitors

DIRECTOR'S VISITORS CONTRIBUTE MUCH to the vitality of the Institute. Scholars from a variety of fields, including areas not represented in the Schools, are invited to the Institute for varying periods of time, depending on the nature of their work.

Yonatan Binyam
History of Religion · ra
Yonatan Binyam studies the relationship between religion and identity, especially the history of anti-Semitism and race as shaped by Christian ideologies. Currently he is analyzing these phenomena as they occurred during late antiquity.

Curtis Callan
Theoretical Physics, Biology · Princeton University
Curtis Callan is a theoretical physicist with broad interests in quantum field theory and statistical physics. He is currently working on problems in biology, with a focus on gene regulation: how it works mechanistically, how it manages to achieve rather precise results in the face of noise, and how it evolved (and evolves).

David Gyllenhaal
History, Religion · ra
David Gyllenhaal's research explores the rationalization process and impact of trauma on Greek- and Syriac-speaking Christians and Arabic-speaking Muslims during the late antique period.

Anna Laqua
Literary Studies, History of Theater
Anna Laqua is investigating the transfer of early modern knowledge between medicine and the theater. The starting point of her research is the historical figure John Bulwer (1606–1656), a London physician and Baconian who had a special interest in theater culture.

Lorenza Pescia De Lellis

Italian Studies, History of Romance Philology · Institute for Advanced Study

One main focus of Lorenza Pescia De Lellis's current research is the influence of translation in multilingual society. Other topics she is working on include the history of the romance philology, linguistic analysis of discourses about women in Italian and Swiss Italian newspapers, as well as the Italian language and sexism.

Siobhan Roberts

Independent Scholar · *f*

Siobhan Roberts is a Canadian author and science journalist. Together with Helmut Hofer, she is writing a book inspired by the life and work of the mathematician Andreas Floer, titled "The Floer Jungle: Charting the Development of a Theory." She is also working on a biography of the mathematical logician Verena Huber-Dyson, which is forthcoming from Pantheon.

Jillian Stinchcomb

Religious Studies, Biblical Studies, Jewish Studies · *ra*

Jillian Stinchcomb's work is in the fields of religious studies, Jewish studies, and biblical studies. She studies the literary dynamics of biblical figures, especially as they intersect with issues of gender and power. While at the Institute, Stinchcomb will be working on the project, "Interactive Histories, Co-produced Communities."

Edmond Shlomo Zuckier

Rabbinic Literature, Philosophy of Religion · *ra*

Edmond Shlomo Zuckier is a scholar of rabbinic literature and philosophy of religion. His prior work has focused on concepts of sacrifice, atonement, and Halakhah (Jewish law). At IAS, Zuckier's research will focus on conceptions of divine will that emerged in antiquity and the medieval period across Judaism, Christianity, and Islam.

Artist–in–Residence Program

THE ARTIST-IN-RESIDENCE PROGRAM was established in 1994 to underscore the Institute's dedication to scholarly and artistic endeavors. Unrestrained curiosity, risk-taking, and even blind faith are concepts native to transformative research and the visual and performing arts. As part of the Artist-in-Residence Program, a pioneering artist is appointed to join the Institute community and curate the Edward T. Cone Concert Series, pursue their creative and intellectual work, and exchange ideas with scholars from all disciplines. Composer David Lang was appointed as Artist-in-Residence in 2015. In 2022–23, Lang continues his VIRTUOSITY program, an exploration of mastery, meaning, and experience.

David Lang
Composer
David Lang is a Pulitzer Prize–winning composer whose recent works include the following: his opera *prisoner of the state*, which premiered in June 2019 with the New York Philharmonic; the score for Paolo Sorrentino's film *Youth*, which received Academy Award and Golden Globe nominations; *man made*, a concerto for Sō Percussion and orchestra; *anatomy theater*, an opera written in collaboration with visual artist Mark Dion; *the public domain*, a commission from Lincoln Center for one thousand amateur singers; and *the loser*, an opera based on the novel by Thomas Bernhard, for which Lang served as librettist, composer, and stage director. Lang is Professor of Music Composition at the Yale School of Music, and Co-Founder and Co-Artistic Director of New York's legendary music festival Bang on a Can.

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Mary Mazza
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Michel Reymond
Chef

Jennifer Richardson
Chief Human Resources Officer/
Title IX Coordinator

Stephen Ackley-Ortiz
Chief Development Officer
Associate Director for Development

Pamela Hughes
Director of Friends Program

Susan Olson
Director of Events

Lee Sandberg
Communications and Public Relations Manager

Library Administration

Emma Moore
Librarian, Mathematics and Natural Sciences

Marcia Tucker
Librarian, Historical Studies and Social Science
(also Coordinator of Information Access for
Computing, Telecommunications, and
Networking Administration)

School Administration

Miriam Harris
Administrative Officer
School of Social Science

Nicole Maldonado
Administrative Officer
School of Mathematics

Danette Rivera
Administrative Officer
School of Historical Studies

Michelle Sage
Administrative Officer
School of Natural Sciences

Programs

Wei Ho
Director
Women and Mathematics

Michelle Huguenin
Administrative Program Manager
Women and Mathematics

Rafe Mazzeo
Director
Park City Mathematics Institute

Computing, Telecommunications, and Networking Administration

Jeffrey Berliner
Chief Information Officer

Brian Epstein
Chief Information Security Officer
Information Technology Manager
Network and Security

Kevin Kelly
Information Technology Manager
School of Mathematics Computing

Dario Mastroianni
Information Technology Manager
Media Technology Services

Christopher McCafferty
Information Technology Manager
Software Engineering

Jonathan Peele
Information Technology Manager
Information Technology Group

James Stephens
Information Technology Manager
School of Natural Sciences Computing

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AiR Artist-in-Residence · *D* Director · *DV* Director's Visitor · *IS* Program in Interdisciplinary Studies
SHS School of Historical Studies · *SM* School of Mathematics · *SM-KEF* Karen Edge Fellow
SNS School of Natural Sciences · *SSS* School of Social Science

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AiR Artist-in-Residence · *D* Director · *DV* Director's Visitor · *IS* Program in Interdisciplinary Studies
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SNS School of Natural Sciences · *SSS* School of Social Science

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Elm Road · Stockton · Mercer · Olden Lane · Springdale Road · College Rd · University Pl · Nassau Street · Alexander · Washington Road · Quaker Rd · Route 1

Haslet Avenue
Battle Rd Circle
Einstein Drive
Ober Road
Olden Lane
Maxwell Lane
Newlin Road
Member Housing
Earle Lane
Flexner Lane
Goldman Lane

to Visitor Housing
to Member Activities Center
to Tennis Courts

Soccer Field
footpath
Parking Lot A
Parking Lot B
Parking

Pond

to Princeton Battlefield State Park

The Institute Woods
Founders' Rock

Map is not to scale

1 **Fuld Hall**
  a Reception
  b Mathematics–Natural Sciences Library (second floor)
  c Common Room
  d Director's Office
2 **Building A**
3 **Building B**
4 **Rubenstein Commons**
5 **Bloomberg Hall**
  e Lecture Hall
  f The Simons Center for Systems Biology

6 **Wolfensohn Hall**
7 **Simonyi Hall**
  g Lecture Hall
8 **Historical Studies–Social Science Library**
  h The Shelby White and Leon Levy Archives Center
  i White-Levy Room
  j Archives Storage
9 **West Building**
  k Lecture Hall (first floor)
  l Seminar Room (second floor)
10 **Birch Garden**

11 **Marilyn and James Simons Hall**
  m Dining Hall (first floor)
  n Dilworth Room (first floor)
12 **Building D**
13 **ECP Building (225 S. Olden Lane)**
  o Crossroads Nursery School
  p Fitness Center
  q Business Office
14 **310 S. Olden Lane**
15 **320 S. Olden Lane**
16 **Olden Farm (97 Olden Lane)**
17 **Modular Office Space**

$$(32)(54)$$

$$(z_1, z_2, z_3, z_4, z_5) = (0, z_2, z_3, 1, \infty).$$

$$s_{24} \to -\infty$$

$$z_{24}$$

$$31452$$

$$\int_\Gamma \prod_{i<j} (z_j - z_i) \quad d^2 z$$

$$\{z_1 < z_2 < \dots < z_n\}$$

$$0 < z_2 < z_3 < 1$$

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$$s_{23}$$
$$s_{45}$$

$$\int z_2^{s_{12}} z_3^{s_{13}} (1-z_2)(1-z_3)^{s_{24}}\left(z_3 - \right)^{s_{34}}$$

$$X_{ij} = p_i + \dots p_{j-1}$$

$$z_2 = y$$
$$z_3 = xy$$

$$X_{13}$$

$- c_{24}$