IAS

Institute for Advanced Study

Faculty and Members 2014–2015

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

Cover: Fuld Hall during teatime Photo: Dan Komoda

Contents

Information contained herein is current as of September 12, 2014.

Mission and History

The Institute for Advanced Study is one of the world's leading centers for theoretical research and intellectual inquiry. The Institute exists to encourage and support curiosity-driven research in the sciences and humanities—the original, often speculative thinking that produces advances in knowledge that change the way we understand the world. It provides for the mentoring of scholars by Faculty, and it ensures the freedom to undertake research that will make significant contributions in any of the broad range of fields in the sciences and humanities studied at the Institute.

Founded in 1930 by Louis Bamberger and his sister Caroline Bamberger Fuld, the Institute was established through the vision of founding Director Abraham Flexner. Past Faculty have included Albert Einstein, who arrived in 1933 and remained at the Institute until his death in 1955, and other distinguished scientists and scholars such as Kurt Gödel, George F. Kennan, Erwin Panofsky, Homer A. Thompson, John von Neumann, and Hermann Weyl.

Abraham Flexner was succeeded as Director in 1939 by Frank Aydelotte, followed by J. Robert Oppenheimer (1947), Carl Kaysen (1966), Harry Woolf (1976), Marvin L. Goldberger (1987), Phillip A. Griffiths (1991), and Peter Goddard (2004). In July 2012, Robbert Dijkgraaf became the Institute's ninth Director.

The Institute has had permanent impact, in both intellectual and practical terms, through the work of its Faculty and Members. One of the Institute's unique strengths is its permanent Faculty, whose broad interests and extensive ties to the larger academic world are reflected in their own work and also in the guidance and direction they provide. The Faculty, numbering approximately thirty, selects and works closely with visiting Members and defines the major themes and questions that become the focus of each School's seminars and other activities. Organized in four Schools (Historical Studies, Mathematics, Natural Sciences, and Social Science), the Faculty and Members interact with one another without any departmental or disciplinary barriers. Each year the Institute awards fellowships to some 190 visiting Members from about one hundred

universities and research institutions throughout the world. The Institute's more than six thousand former Members hold positions of intellectual and scientific leadership in the United States and abroad. Thirty-three Nobel Laureates and forty out of fifty-six Fields Medalists, as well as many winners of the Wolf and MacArthur prizes, have been affiliated with the Institute.

Located in Princeton, New Jersey, the Institute is a private, independent academic institution with no formal links to other educational institutions. However, there is a great deal of intellectual, cultural, and social interaction with other nearby institutions. The Institute's Historical Studies–Social Science Library has a collection of some 125,000 volumes and subscribes to more than 1,000 journals. The Mathematics–Natural Sciences Library contains about 30,000 volumes and an important collection of journals. Institute scholars have full access to the libraries of Princeton University and the Princeton Theological Seminary.

The Institute is situated on eight hundred acres of land, the majority of which is conserved permanently, forming a key link in a network of green spaces in central New Jersey and providing a tranquil environment for Institute scholars and members of the community. The Institute does not receive income from tuition or fees. Resources for operations come from endowment income, grants from private foundations and government agencies, and gifts from corporations and individuals.

Robbert Dijkgraaf

Director and Leon Levy Professor

Robbert Dijkgraaf is a leading mathematical physicist who has made significant contributions to string theory and the advancement of science education. He has identified deep connections between particle physics and mathematics, as well as between different areas of mathematical physics. His work has influenced understanding of string theory in low dimensions, topological strings, the dynamics of supersymmetric gauge theories, and the quantum states of black holes. A distinguished public policy adviser and passionate advocate for science and the arts, Dijkgraaf previously served as President of the Royal Netherlands Academy of Arts and Sciences (2008–12) and has been Co-Chair of the InterAcademy Council since 2009.

School of Historical Studies

Administrative Officer: Marian Gallagher Zelazny

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, but rather supports all learning for which historical methods are appropriate. The School embraces a historical approach to research 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 Far Eastern civilizations, with emphasis on Greek and Roman civilization, the history of Europe (medieval, early modern, and modern), the Islamic world, and East Asia. The School has also supported scholars whose work focuses on other regions, including Central Asia, India, Africa, and the Americas.

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. 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 encourages the creation of new historical enterprises.

Yve-Alain Bois

Professor · Art History

A specialist in twentieth-century European and American art, Yve-Alain 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. The curator of a number of influential exhibitions, he is currently working on several long-term projects, including a study of Barnett Newman's paintings, the catalogue raisonné of Ellsworth Kelly's paintings and sculptures, and the modern history of axonometric projection.

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, and identity. He is interested in previously unexplored aspects of the ancient world in a dialogue with other disciplines.

Nicola Di Cosmo

Luce Foundation Professor in East Asian Studies · East Asian Studies

Nicola Di Cosmo's research focuses on the relations between China and Inner Asia from prehistory to the early modern period. He is interested in the history and archaeology of China's northern frontiers, cultural contacts between China and Central Asia, and the military, political, and social history of Chinese dynasties of Inner Asian origin. His most recent and forthcoming works include studies on Chinese military culture, Chinese historiography, the early history of the Manchu state, and relations between Europe and the Mongol empire.

Patrick J. Geary

Professor · Medieval History

Patrick Geary's work extends over a vast range of topics in medieval history, both chronologically and conceptually—from religiosity to language, ethnicity, social structure, and political organization. Many of his essays and books remain standard literature in the field and have been translated in multiple languages. 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 cemeteries in Hungary and in Italy. He also directs 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.

Jonathan Israel

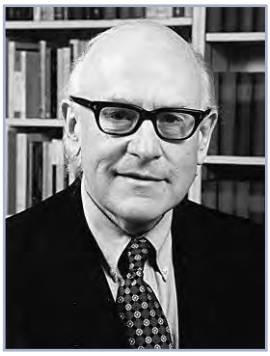
Andrew W. Mellon Professor · Modern European History

Jonathan Israel's work is concerned with European and colonial history from the Renaissance to the eighteenth century. His recent work focuses on the impact of radical thought (especially Spinoza, Bayle, Diderot, and 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.

Sabine Schmidtke

Professor · Islamic Intellectual History

Sabine Schmidtke is a scholar of Islamic intellectual history whose research has transformed perspectives about 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 postclassical period (thirteenth to nineteenth centuries) 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 Spain. She is also engaged in a comprehensive study of the Muslim reception of the Bible, a topic on which she has published extensively.



Glen W. Bowersock

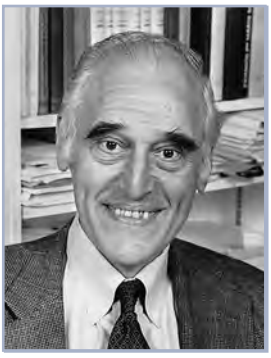
Professor Emeritus · Ancient History

Glen Bowersock is an authority on Greek, Roman, and Near Eastern history and culture as well as the classical tradition in modern literature. The author of numerous important volumes and articles, 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 Bynum studies the social, cultural, and intellectual history of Europe from the early Middle Ages to the early modern period. Her books have explored women's religious movements, the history of the body, the role of sacrifice in religion, and the materiality of late medieval art and devotion in its social context. She is currently working on a comparison of Western and non-Western pieties and on the significance of religious objects in women's monastic houses in Germany before and after the Protestant Reformation.



Giles Constable

Professor Emeritus · Medieval History

The medievalist Giles Constable is the author or editor of more than twenty books in the area of medieval religious and intellectual history concerning, among other subjects, the origins of monastic tithes, Peter the Venerable, the people and power of Byzantium, medieval religious and social thought, the reformation of the twelfth century, Renaissance Florence as seen through the case of Antonio Rinaldeschi, twelfth-century crusading, the history of Cluny, and the fourteenth-century crusading propagandist William of Adam. He continues to work on the California Gold Rush and on early medieval monasticism.

Patricia Crone

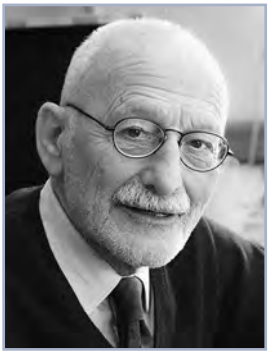
Professor Emerita · Islamic History

Patricia Crone's research is focused on the Near East from late antiquity to the coming of the Mongols. She is interested in the delineation of the political, religious, and cultural environment in which Islam began and how it transformed, and was itself transformed by, the regions that the Arabs conquered. Originally a political, social, and military historian (some diversions notwithstanding), she has been steadily moving into the history of ideas. She now works mainly on the Qur'an on one hand and the cultural and religious traditions of Iraq, Iran, and the formerly Iranian part of Central Asia on the other.

Christian Habicht

Professor Emeritus · Ancient History

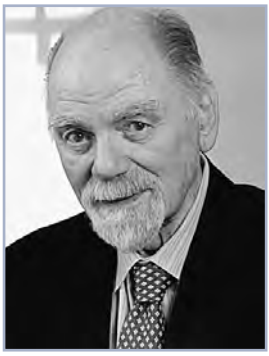
Christian Habicht is among the leading historians of the Hellenistic period. He is an authority on Greek epigraphy and on the history of Athens between Alexander the Great and Augustus. He has published books on the Hellenistic ruler-cults, on the Maccabees, on Cicero, and on Pausanias. He has edited hundreds of previously unpublished inscriptions from important sites in Greece and Asia Minor. To a new bilingual edition of Polybius, he contributed the introduction and explanatory notes; six volumes were published in 2010–12. An updated English edition of his doctoral dissertation, submitted in German in 1951, is scheduled to be published as "Divine Honors for Mortal Men in Greek Cities: The Early Cases" by Michigan Classical Press.



Irving Lavin

Professor Emeritus · Art History

Irving Lavin is one of America's most distinguished art historians. He has written extensively on the history of art from late antiquity to modern times, including numerous studies on Italian painting, sculpture, and architecture of the Renaissance and Baroque periods. His interests have focused primarily on the correlation between form and meaning in the visual arts. Two volumes of his collected works appeared under the title *Visible Spirit* (2007–09). A third volume, "Bernini at St. Peter's: The Pilgrimage," appeared in 2013, and a lengthy essay, "Divine Grace and the Remedy of the Imperfect: Michelangelo's Signature on the St. Peter's Pietà," is in course of publication.



Peter Paret

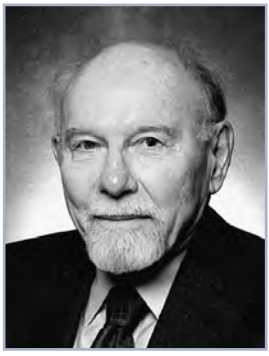
Professor Emeritus · Modern European History

Peter Paret is a cultural and intellectual historian with particular interest in the interaction of war and society since the eighteenth century, how historians integrate war with their interpretation of other historical forces, and the relationship between tradition and modernism in the art of nineteenth and twentieth-century Europe. His most recent book (2012), written with Helga Thieme, *Myth and Modernity: Ernst Barlach's Drawings on the Nibelungen*, discusses a modern interpretation of a medieval myth as a document of German history in the 1920s and 30s.

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 current research is on the role of animals in ancient scientific theories and practices, on genres of scientific and medical literature in antiquity, and on the "semantics of matter" in ancient science and medicine.



Morton White

Professor Emeritus · Philosophy and Intellectual History

Morton White is one of America's leading thinkers. In his philosophy of holistic pragmatism, he tries to bridge the positivistic gulf between analytic and synthetic truth as well as that between moral and scientific belief. He maintains that philosophy of science is not philosophy enough, thereby encouraging the examination of other aspects of civilized life—especially art, history, law, politics, and religion—and their relations with science.

Holger Horst Afflerbach
Modern History · University of Leeds
Funding provided by the Fund for Historical Studies

Holger Afflerbach is researching a revaluation of German warfare 1914–18, the reasons for Germany's defeat, and a portrait of its leadership. He plans to treat military turning points of the war ("decisive battles"), as well as events on the home front and aspects of economic warfare.

Hassan Farhang Ansari
Intellectual and Legal Studies · Institute for Advanced Study
Elizabeth and J. Richardson Dilworth Fellow

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

Marco Barducci
Intellectual History · Institute for Advanced Study
Gerda Henkel Stiftung Member

Marco Barducci's research focuses on the circulation, exchange, and reception of political works and ideas between England, Italy, and Northern Europe in the early modern period. At the Institute, he will study the English reception of the works of Hugo Grotius (1583–1645) in the seventeenth and early eighteenth centuries.

Robert J. Bartlett
Medieval History · University of St Andrews
Funding provided by the Fund for Historical Studies

Robert Bartlett specializes in the history of medieval frontier regions, the cult of the saints, and English history after the Norman Conquest. He is editing "Instruction for a Ruler" by Gerald of Wales (d. 1223), a hybrid of a Mirror of Princes and a vitriolic contemporary history.

Adam G. Beaver
Spain and the Renaissance Mediterranean · Princeton University
The Andrew W. Mellon Foundation Fellowships for Assistant Professors

At IAS, Adam Beaver plans to complete a new edition, translation, and study of the Renaissance humanist Pietro Martire d'Anghiera (1457–1526) and his *Legatio Babylonica* (1511), a fascinating account of Spanish-Egyptian relations in the Late Middle Ages and Renaissance.

f First Term · *s* Second Term · *v* Visitor · *vp* Visiting Professor · *a* Research Assistant

David Anthony Bello

Late Imperial Chinese History, Environmental History · Washington and Lee University

Funding provided by the Herodotus Fund

David Bello's environmental history project examines the interdependent effects of water and ethnic diversity on the Qing (1644–1912) dynasty's eighteenth-century westward expansion into Tibet and Xinjiang. The project explores the formation of diverse embodiments of the Qing order conditioned by arid environments in Xinjiang and Tibet, in contrast to those prevailing in alluvial China proper.

Martin Bentz

Classical Archaeology · Universität Bonn · *v, f*

Martin Bentz is studying the Greek pottery industry in the archaic and classical periods from an economic perspective. Using a quantitative approach and drawing on a corpus of workshop sites and their urban setting, he plans to investigate the role of pottery in the economy of the city-state.

Sarah Betzer

Eighteenth- and Nineteenth-Century Art · University of Virginia

Funding provided by the Hetty Goldman Membership Fund

Sarah Betzer is examining artistic encounters with and pictorial responses to ancient figural sculpture, from the discoveries of Herculaneum and Pompeii to the late nineteenth century. Her study probes ancient sculpture's centrality to vital debates, at once philosophical, aesthetic, antiquarian, archaeological, touristic, museological, and art historical in nature.

John P. Bodel

Ancient History · Brown University · *s*

Funding provided by The Andrew W. Mellon Foundation

John Bodel will be working on a book about the ancient Roman funeral that will link up the two "halves" of the cultural history of death in the West by tracing ancient practices through to the early Middle Ages, where Philippe Ariès began his study *L'homme devant la mort*.

Ari Bryen

Ancient History · West Virginia University

The Andrew W. Mellon Foundation Fellowships for Assistant Professors

Ari Bryen's project combines documentary, literary, and legal sources to write a history of the rise of "legal consciousness" among provincial populations of the Roman Empire and the effects of that consciousness on imperial governance in the first through fourth centuries.

f First Term · *s* Second Term · *v* Visitor · *vp* Visiting Professor · *a* Research Assistant

Suzannah Clark

History of Music Theory · Harvard University
Edward T. Cone Member in Music Studies

Suzannah Clark is tracing why music theorists sought to explain foundational concepts of tonality using symmetrical principles and why their ambition never worked out, leaving inexplicable "quirks" in their theories. She will examine how these quirks shaped nineteenth-century perceptions of harmony in order to recapture a nineteenth-century way of hearing music.

Michael Cole

Renaissance and Baroque Art · Columbia University
The Gladys Krieble Delmas Foundation Member; additional funding provided by the Elizabeth and J. Richardson Dilworth Fellowship Fund

Michael Cole is writing a history of anti-materialist art in the West: art that in its substance or imagery positions itself against some richer thing. He plans to show that various local gestures of "impoverishment," well known to specialists, in fact belong to a longer and largely unrecognized tradition. In addition, he will differentiate the terms and values associated with aesthetic poverty in its varied iterations.

David Bruce Crouch

Medieval History (Aristocracy) · University of Hull · *s*
Elizabeth and J. Richardson Dilworth Fellow

David Crouch works principally in the field of British and French aristocratic culture, though his interests span many areas of social and political history. At IAS, he aims to refine the debate concerning conduct regarded as noble in the period 1100–1300.

Olindo De Napoli

Colonialism, International Law · Università degli Studi di Napoli Federico II
Friends of the Institute for Advanced Study Member

Olindo De Napoli is writing a comparative history of European legal thought on colonialism in the age of empires. He will examine writings of nineteenth-century jurists on topics such as nationalism, colonial and international law, and comparisons drawn with the Roman Empire, to find what they reveal about connections in ideas and networks between jurists of different nations.

Vincent Debiais

History and Theory of Medieval Art · Centre National de la Recherche Scientifique, Paris
Funding provided by the Florence Gould Foundation Fund

Vincent Debiais's research explores the intellectual conception and uses of silence in eleventh- and twelfth-century material culture, in order to determine its plastic qualities and complex symbolic foundations in material expression.

f First Term · *s* Second Term · *v* Visitor · *vp* Visiting Professor · *a* Research Assistant

Poshek Fu
Modern Chinese Studies, Film History · University of Illinois at Urbana-Champaign
AMIAS Member

Poshek Fu investigates the intersection between Cold War history and film culture. At IAS, he is studying how China mobilized cinema for its internal Cold War campaigns and the cinematic war in Hong Kong between China, Taiwan, and the United States to win the hearts and minds of Chinese people across Asia.

Ottó Sándor Gecser
History of Medicine · Eötvös Loránd University · *s*
Funding provided by the Herodotus Fund

Ottó Gecser is studying the interplay between religious and medical views on pestilence from the Black Death until the sixteenth century. Currently, he is focusing on how Observant Franciscan authors reacted to medical explanation and advice increasingly made available for a wider public through plague tracts.

Linda Jane Goddard
Nineteenth- and Twentieth-Century Art · University of St Andrews
Louise and John Steffens Founders' Circle Member

Linda Goddard is interested in relations between art and literature. She will be working on Paul Gauguin's extensive and varied writings, a neglected aspect of his oeuvre, which can provide a model for thinking about artists' writings more broadly. She will also be conducting a smaller study of definitions of the practice of art writing.

Asaf Goldschmidt
History of Medicine in China · Tel Aviv University
Funding provided by the Herodotus Fund

Asaf Goldschmidt is exploring the history of the case history genre in China, in order to reconstruct the physician's perspective on the clinical scene and to examine how physicians used medical case histories to transmit medical knowledge to posterity during the Song-Yuan-Ming transition.

Karen Anne Hamnet Green
Intellectual History · The University of Melbourne · *s*
Rosanna and Charles Jaffin Founders' Circle Member

Karen Green is a philosopher who has published on women's intellectual history and in many other areas of philosophy. She is currently researching Catharine Macaulay's historical and philosophical writing and her place in the Radical Enlightenment in Great Britain and abroad.

f First Term · *s* Second Term · *v* Visitor · *vp* Visiting Professor · *a* Research Assistant

Stephen John Harrison

Classics, Latin Literature · University of Oxford · *s*
Edwin C. and Elizabeth A. Whitehead Fellow

Stephen Harrison works on the literary interpretation and later reception of the writers of ancient Rome, especially the poets Horace and Vergil (first century B.C.E) and the novelist Apuleius (second century C.E.). His present project is a commentary for a modern readership on a book of Horace's *Odes*.

Danian Hu

Modern Physics and Twentieth-Century China · The City College of New York · *f*
Agnes Gund and Daniel Shapiro Member

Danian Hu is researching a book on the evolution of the Chinese physics community during the entire twentieth century. Examining the unique interplay in China between science and radical sociopolitical changes, this Chinese story supplements earlier studies on the United States and USSR while identifying features of twentieth-century Chinese science.

Jinhua Jia

History of Chinese Religions, Literary Studies · University of Macau · *s*

Jinhua Jia's project brings to light many new texts to explore how Daoist priestesses in the Tang dynasty of China realized their individual worth by excelling in religious leadership, Daoist theory and practice, Chinese medicine, and poetry, in the process of negotiating religious and social forces and norms.

George Kallander

Premodern Korean History · Syracuse University
The Starr Foundation East Asian Studies Endowment Fund Member

George Kallander is studying political identity and cultural practices in Korea's Koryŏ dynasty (918–1392) to demonstrate how the peninsula was affected by regional dynamics. Using examples of the royal hunt, he explores how debates among scholars about proper conduct stemmed from tensions surrounding Korea's contact with regional and Eurasian empires.

Marion Holmes Katz

Islamic Law and Gender · New York University
The Gladys Krieble Delmas Foundation Member

Marion Katz's project examines debates over marital rights and duties among Muslim legal thinkers of the thirteenth to fourteenth centuries C.E., focusing on domestic labor and sexual submission as gendered obligations. It also studies the evolving relationship between marriage and slavery in Islamic legal thought.

f First Term · *s* Second Term · *v* Visitor · *vp* Visiting Professor · *a* Research Assistant

Geoffrey Allan Khan

Arabic Papyrology, Semitic Philology · University of Cambridge · *s*

At IAS, Geoffrey Khan is working on an edition of a corpus of medieval Arabic documents from Nubia. These consist of legal documents and correspondence with the Viceroy of Nubia. The correspondence casts new light on medieval trade networks in the region.

Guolong Lai

East Asian Art and Archaeology · University of Florida

Funding provided by the Hetty Goldman Membership Fund

Guolong Lai's project is a multidisciplinary study of the history of heritage conservation in China over the course of the twentieth century. By focusing on the tension between Chinese practices and Western methodologies, it examines the vicissitudes of Chinese attitudes toward the past as revealed in conservation theories and practices, cultural legislation, and related intellectual debates.

Jon E. Lendon

Ancient History · University of Virginia

Willis F. Doney Member

Jon Lendon will explore the influence on public policy of elite education in rhetoric under the Roman empire; specifically, how an education narrowly directed at public speaking caused men of power to act in real-world realms such as city planning, law, foreign affairs, and imperial politics.

Vayos Liapis

Classics · Open University of Cyprus · *f*

Elizabeth and J. Richardson Dilworth Fellow

Vayos Liapis's areas of interest are Greek tragedy and its reception, archaic poetry, Hellenistic epigram, and wisdom literature. His project at IAS concerns the interactions between the monetization of Greek society and contemporaneous patterns of thought in the sixth and fifth centuries.

Xin Luo

Medieval Chinese History · Peking University

The Starr Foundation East Asian Studies Endowment Fund Member

Xin Luo is exploring the history of the Inner Asian peoples in relation to the conquering and ruling of northern China between the Han and Tang dynasties, especially the process by which those who migrated from the steppes into China eventually became Chinese.

f First Term · *s* Second Term · *v* Visitor · *vp* Visiting Professor · *a* Research Assistant

John Mark Marincola

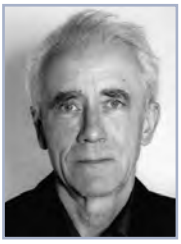
Classics · Florida State University · *s*
Martin L. and Sarah F. Leibowitz Member

John Marincola's main research interests are in Greek and Roman historiography and rhetoric. At the Institute, he is examining the ways in which historians during the Hellenistic period (323–31 B.C.E) sought to raise the emotions of their readers and the reasons why they may have done this.

Sara Ann McDougall

Medieval Legal and Cultural History · John Jay College of Criminal Justice, The City University of New York
The Andrew W. Mellon Foundation Fellowships for Assistant Professors

Sara McDougall is investigating the consequences of adultery for kings, queens, and commoners of fifteenth-century France, seeking out the role of gender and social hierarchy in the ideas and practices of adultery in French law, society, and culture. She is also writing about kingship, illegitimacy, and the role of the canon law of marriage in the political ordering of medieval Europe.



Alexander Desmond Potts

Nineteenth- and Twentieth-Century Art and Theory · University of Michigan
Funding provided by The Andrew W. Mellon Foundation

Alex Potts works on conceptions of realism and naturalism in modern art. At the Institute, he will examine the broader ambition to picture the social in naturalist and formalist art of the later nineteenth century, as well as understandings of visual cognition and truthful depiction that informed the period's visual aesthetic.

Jonathan Jay Price

Ancient History, Epigraphy · Tel Aviv University · *f*
Elizabeth and J. Richardson Dilworth Fellow

At IAS, Jonathan Price will develop an analytical corpus of the more than six hundred inscriptions from ancient synagogues, in all languages and locations, from Graeco-Roman antiquity. A comparative epigraphic and historical commentary will reveal the connection of each inscription or group of inscriptions to the local linguistic and epigraphic setting.

Nicole Reinhardt

Early Modern Political and Religious Culture · Durham University
Elizabeth and J. Richardson Dilworth Fellow

Nicole Reinhardt is exploring the notion of "counsel of conscience" in early modern politics through the rise and fall of royal confessors in Spain and France in the seventeenth century. From this perspective, she plans to engage with modernization paradigms like the emergence of "absolutism," individualization, and the division of public and private.

f First Term · *s* Second Term · *v* Visitor · *vp* Visiting Professor · *a* Research Assistant

Teemu Ruskola
Chinese Legal History · Emory University
Friends of the Institute for Advanced Study Member

Teemu Ruskola will examine the history of the introduction of Western international law in China and analyze the implications of that history for the theory and politics of international law.

Patrick Sänger
Ancient History, Papyrology · Universität Wien · *f*
Funding provided by the Herodotus Fund

Patrick Sänger is investigating the jurisdiction within ethnic groups that were organized as a politeuma, a specific form of organization that appears predominately in Hellenistic Egypt. His research is based on a papyrus archive documenting a Jewish politeuma in the nome capital Herakleopolis (Middle Egypt) and is also part of a book dealing with ethnic politeumata in general.

William Michael Schmidli
International Cold War History · Bucknell University
Funding provided by the Herodotus Fund

William Schmidli is studying the evolving role of human rights in U.S. foreign relations since 1945. At IAS, he plans to analyze the significance of promoting democracy as a component of the Ronald Reagan Administration's Cold War strategy, focusing on U.S. policy toward Latin America.

Ned Schoolman
Early Medieval Italy · University of Nevada, Reno
George William Cottrell, Jr., Member

Ned Schoolman will examine a single noble Italian family from the ninth through the eleventh centuries, focusing on the construction and creation of new identities, the role of women in memory and property, and strategies used to maintain aristocratic power during periods of political instability.

Richard VanNess Simmons
Chinese Dialects, Phonology, and History · Rutgers, The State University of New Jersey · *s*
The Starr Foundation East Asian Studies Endowment Fund Member

Richard Simmons is investigating the history of Mandarin and compiling a comprehensive picture of the language from its earliest appearance to the present, with regard to the history of the Mandarin dialects and the evolution of the standard written and spoken languages of China.

f First Term · *s* Second Term · *v* Visitor · *vp* Visiting Professor · *a* Research Assistant

Amy Elizabeth Singer

Ottoman History · Tel Aviv University
William D. Loughlin Member

Amy Singer is studying Ottoman Edirne (Adrianople) to understand this long-neglected Ottoman city, the capital before the conquest of Istanbul and thereafter an enduring center of imperial and international activity. This research utilizes the full range of Ottoman sources in combination with historical Geographical Information Systems and insights from spatial history.

Nader Sohrabi

Ottoman History, Iranian History · Carleton College
Funding provided by the Herodotus Fund and the Patrons' Endowment

Nader Sohrabi is interested in the study of collective action, revolution, nationalism, and ethnic conflict in the Middle East in the early twentieth century. He is currently investigating the breakdown of the Ottoman Empire as the result of the explosive interaction of nationalism and war.

Vlada Stankovic

Byzantine and Balkan Studies · University of Belgrade
Willis F. Doney Member

Vlada Stankovic is examining a peculiar government of kinsmen created in southeastern Europe in the twelfth and thirteenth centuries, and a change of political paradigm from a state-centered to a family-centered model that had crucial consequences for the development of this region in the Late Middle Ages and beyond.

Owen Stanwood

Atlantic World, Colonial America · Boston College
Hans Kohn Member

Owen Stanwood's research focuses on early modern European expansion and imperialism. At the Institute, he plans to work on a global history of the Huguenot diaspora, following Protestant refugees from France to the edges of the British and Dutch empires in the Americas, Africa, and Asia.

Andrea Sterk

Late Antiquity · University of Florida · *f*
Felix Gilbert Member; additional funding provided by the Elizabeth and J. Richardson Dilworth Fellowship Fund

Andrea Sterk is investigating both the notion and the practice of Christian mission along the extensive frontiers of the East Roman Empire, ca. 300–900. Within the broader framework of Byzantine political history, she plans to focus on mission "from below" rather than a more typical "top-down" narrative of Christianization.

f First Term · *s* Second Term · *v* Visitor · *vp* Visiting Professor · *a* Research Assistant

Wendy Swartz

Premodern Chinese Literature · Rutgers, The State University of New Jersey

Funding provided by the Fund for Historical Studies

Wendy Swartz's research explores intertextuality as a mode of reading and principle of writing in medieval China, by examining how writers utilized diverse, heterogeneous sources suited to their needs. At IAS, she aims to elucidate reading and writing practices, as well as assumptions about literary production and interpretation in premodern China.

Emily Ann Thompson

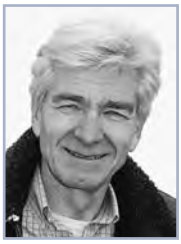
History of Technology, Sound, Music · Princeton University

Emily Thompson is examining the nature of both technological and artistic creativity in the American film industry during the transition from silent to sound motion pictures, ca. 1925–33. She will explore the work of musicians, sound engineers, editors, and projectionists to demonstrate how creative hybrids—people, practices, and technologies—fundamentally transformed this industry.

Stephen V. Tracy

Greek History and Epigraphy · Institute for Advanced Study · *v*

Stephen Tracy is helping English and Australian colleagues prepare a new edition of Athenian decrees of the late fourth to third centuries B.C. He is also working on Athenian letter cutting of the second half of the fifth century B.C. and on the hands of the so-called "Athenian Tribute Lists."



Michael van Walt van Praag

Modern International Relations and International Law · Institute for Advanced Study · *vp*

An expert in the field of intrastate conflict resolution and international law as well as a mediator, Michael van Walt seeks to create conditions for equitable peace by addressing core causes of conflict. He is currently exploring innovative ways to overcome obstacles in peace processes posed by conflicting interpretations of history.

Moulie Vidas

Rabbinic Literature, Late Antiquity · Princeton University

The Andrew W. Mellon Foundation Fellowships for Assistant Professors

Moulie Vidas is examining the emergence of Talmudic culture in third- and fourth-century Palestine. His premises are that this period saw wide-ranging transformations in rabbinic scholarly practices that cohere with broad features of late ancient scholarship, and that these transformations led to the production of the first Talmud.

f First Term · *s* Second Term · *v* Visitor · *vp* Visiting Professor · *a* Research Assistant

K. Steven Vincent

Modern European History · North Carolina State University at Raleigh · *f*

Funding provided by the Fund for Historical Studies

Steven Vincent is working on an intellectual biography of Élie Halévy (1870–1937), which will analyze the evolution of the French liberal sociopolitical tradition (that includes, most famously, Montesquieu, Constant, Tocqueville, and Taine) as it confronted the sociological and psychological breakthroughs of late nineteenth-century thought, the trauma of World War I, and the crisis of interwar European politics.

Thomas Wallnig

History of Scholarship · Universität Wien · *s*

Hans Kohn Member; additional funding provided by the Herodotus Fund

Thomas Wallnig is working on a book manuscript on the German Benedictines, 1680–1740, in which he sets out to contextualize Central European monastic scholarship both in learned habits and practices of the early eighteenth century and in current historiographical debates about the Enlightenment and the Republic of Letters.

Xi Wang

Late Imperial Chinese History · Renmin University of China · *a*

Xi Wang is studying the history of the relations between Mongolians and Manchus from the seventeenth to the eighteenth centuries and is participating in a larger research project on climate change in Mongolia during this same period.

Mykhaylo Yakubovych

Islamic Studies · The National University of Ostroh Academy · *f*

Willis F. Doney Member

Starting in the fourteenth century, Muslim scholars from Crimea produced numerous works dedicated to Islamic law, theology, and mysticism. Using a variety of sources (mostly manuscripts), Mykhaylo Yakubovych aims to reconstruct the complexity of postclassical Islamic intellectual life in this region.

f First Term · *s* Second Term · *v* Visitor · *vp* Visiting Professor · *a* Research Assistant

School of Mathematics

Administrative Officer: Mary Jane Hayes

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 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 seventy-five years 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.

Claire Voisin of the Institut de Mathématiques de Jussieu will be the School's Distinguished Visiting Professor during the 2014–15 year. Professor Voisin will lead a special program on "The Topology of Algebraic Varieties." This program intends to bring a mix of people interested in various aspects of the subject: motives, K-theory, Chow groups, periods and fundamental groups.

Other programs associated with the School are the Institute for Advanced Study/Park City Mathematics Institute (PCMI), an innovative program integrating mathematics research and mathematics education, and the Program for Women and Mathematics, jointly sponsored with Princeton University, which brings together research mathematicians with women undergraduate and graduate students for an intensive ten-day workshop held on campus.

Jean Bourgain

IBM von Neumann Professor

Jean Bourgain's work touches on many central topics of mathematical analysis: the geometry of Banach spaces, harmonic analysis, ergodic theory, spectral problems, and nonlinear partial differential equations from mathematical physics and combinatorial number theory. His contributions have solved longstanding problems in convexity theory and harmonic analysis such as Mahler's conjecture and the lambda-p set problem. His work also has had important consequences in theoretical computer science and on exponential sums in analytic number theory. In Hamiltonian dynamics, he developed the theory of invariant Gibbs measures and quasi-periodicity for the Schrödinger equation.

Helmut Hofer

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."

Robert MacPherson

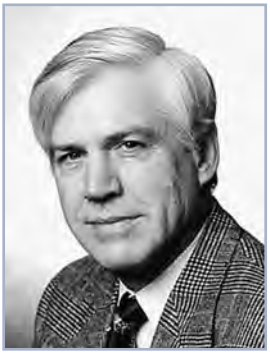
Hermann Weyl Professor

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.

Peter Sarnak

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.



Thomas Spencer

Professor

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 also has 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.

Richard Taylor

Robert and Luisa Fernholz Professor

A leader in the field of number theory and in particular Galois representations, automorphic forms, and Shimura variations, Richard Taylor, with his collaborators, has developed powerful new techniques for use in solving longstanding problems, including the Shimura-Taniyama conjecture, the local Langlands conjecture, and the Sato-Tate conjecture. Currently, Taylor is interested in the relationship between l-adic representations for automorphic forms—how to construct l-adic representations for automorphic forms and how to prove given l-adic representations that arise in this way.

Vladimir Voevodsky

Professor

Vladimir Voevodsky is known for his work in the homotopy theory of schemes, algebraic K-theory, and interrelations between algebraic geometry and algebraic topology. He made one of the most outstanding advances in algebraic geometry in the past few decades by developing new cohomology theories for algebraic varieties. Among the consequences of his work are the solutions of the Milnor and Bloch-Kato conjectures. Currently, he is interested in type-theoretic formalizations of mathematics and automated proof verification. He is working on new foundations of mathematics based on homotopy-theoretic semantics of Martin-Lof type theories.

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.

Pierre Deligne

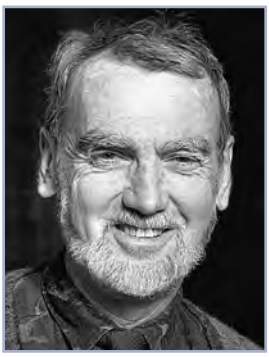
Professor Emeritus

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.

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 chairs 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. He has spent some of his time in recent years studying lattice models of statistical physics and the attendant conformal invariance.

Karim Alexander Adiprasito
Combinatorics in Algebra, Geometry, and Topology · Institute for Advanced Study · *s*
Funding provided by the National Science Foundation
Karim Adiprasito is interested in the topology of subspace arrangements, the generalization and application of Stanley-Reisner theory, and deformation spaces of combinatorial objects (including framework rigidity and the relation to toric algebraic geometry).

Noga Alon
Combinatorics · Tel Aviv University · *vp, f*
Funding provided by the Oswald Veblen Fund
Noga Alon is working on questions in discrete mathematics and theoretical computer science. His current research focuses on problems in extremal and probabilistic combinatorics, information theory, combinatorial number theory, and discrete probability. At the Institute, he plans to combine combinatorial tools with algebraic and probabilistic techniques.

Alexey Ananyevskiy
Algebra · Institute for Advanced Study · *s*
Funding provided by the National Science Foundation
Alexey Ananyevskiy is interested in the homotopy methods introduced to algebraic geometry by Morel and Voevodsky and the corresponding techniques applied to the study of oriented algebraic cohomology theories. At IAS, he aims to develop further the theory of special linear orientation and apply it to particular cohomology theories, such as derived Witt groups and oriented Chow groups.

Donu Arapura
Algebraic Geometry · Purdue University · *f*
Ralph E. and Doris M. Hansmann Member
Donu Arapura's research is primarily concerned with Hodge theory and some of its applications. The latter include applications to the topology of algebraic varieties and the construction of various vanishing theorems.

Stefanos Aretakis
Partial Differential Equations, Mathematical Physics · Institute for Advanced Study and Princeton University · *vri*
Stefanos Aretakis is interested in hyperbolic partial differential equations that arise in Einstein's theory of general relativity. His main focus has been the study of stability and instability properties of the wave equation on black hole backgrounds. At IAS, he plans to study the black hole stability and uniqueness problem.

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vf Veblen Fellow · *vri* Veblen Research Instructorship · *vnf* von Neumann Fellowship
j Joint Member School of Natural Sciences

Christopher Beck
Mathematics · Institute for Advanced Study
Funding provided by the National Science Foundation
Christopher Beck has published on time-space tradeoffs in proof systems and sampling lower bounds for circuits. At IAS, his research concerns proving lower bounds against proofs and circuits of various kinds, as well as some other models of computation.

Raphaël Beuzart-Plessis
Mathematics · Institute for Advanced Study
Funding provided by the National Science Foundation
Raphaël Beuzart-Plessis is primarily interested in the fields of representation theory and number theory. He is currently working on relative local harmonic analysis, particularly the Gan-Gross-Prasad conjecture.

Matthew Strom Borman
Symplectic Geometry · Institute for Advanced Study
Neil Chriss and Natasha Herron Chriss Founders' Circle Member
Matthew Borman is studying rigidity and flexibility phenomena in symplectic geometry and dynamics using Floer theory, pseudoholomorphic curves, and h-principles.

Patrick Gerald Brosnan
Algebraic Geometry · University of Maryland · *f*
Patrick Brosnan is interested in topological invariants of algebraic varieties. At the Institute, he plans to work primarily on topics related to Hodge theory.

Francis Brown
Mathematics · Institut de Mathématiques de Jussieu, Université Paris VII · *vnf*
Funding provided by the National Science Foundation
Francis Brown is researching periods of fundamental groups (especially of modular curves) and applications to number theory.

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j Joint Member School of Natural Sciences

Serge Marc Cantat

Geometry and Dynamical Systems · CNRS, Université de Rennes 1 · *f*
Ralph E. and Doris M. Hansmann Member; additional funding provided by The Bell Companies Fellowship Fund

Serge Cantat is studying groups of algebraic transformations, for instance, polynomial transformations of affine spaces, and the dynamics of such transformations.

Yaiza Canzani

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

Yaiza Canzani is focusing on the spectral theory of the Laplace operator on Riemannian manifolds. She is particularly interested in nodal sets and asymptotic behavior of Laplace eigenfunctions.

Ana Caraiani

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

Ana Caraiani is interested in the classical and p-adic Langlands programs and the geometry of Shimura varieties. In particular, she studies the l-adic Galois representations associated to automorphic forms using geometric techniques together with the trace formula. She also studies the connection between modularity lifting theorems and p-adic local Langlands.

Pierre-Henri Chaudouard

Automorphic Forms · Université Paris VII · *vnf, f*
Funding provided by the National Science Foundation

Pierre-Henri Chaudouard's research concerns the Langlands program. He is especially interested in interactions among Langlands functorialities, Arthur-Selberg or relative trace formulae, and the geometry of some moduli spaces.

Anindya De

Theoretical Computer Science · Institute for Advanced Study · *v*

Anindya De is interested in complexity theory and topics at the intersection of learning theory and discrete Fourier analysis. More generally, he likes topics with a flavor of analysis and probability.

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vf Veblen Fellow · *vri* Veblen Research Instructorship · *vnf* von Neumann Fellowship
j Joint Member School of Natural Sciences

Mark de Cataldo

Algebra · Stony Brook University, The State University of New York · *f*

Funding provided by the James D. Wolfensohn Fund

Mark de Cataldo studies algebraic geometry. He specializes in topology, Hodge and cycle theory of algebraic varieties, and maps. At IAS, he plans to explore further the topological properties of the Hitchin fibration for GL(3,C).

Agnès Desolneux

Applied Mathematics · École Normale Supérieure de Cachan · *f*

Agnès Desolneux is studying stochastic methods for image analysis, modeling texture images with random fields, and geometry of excursion sets of random fields (for instance, shot noise random fields).

Hansheng Diao

Number Theory · Institute for Advanced Study · *s*

Funding provided by the National Science Foundation

Hansheng Diao is interested in p-adic Hodge theory, (phi, Gamma)-modules, and families of Galois representations. He studies the geometry of eigencurves/eigenvarieties. Additionally, he is interested in perfectoid spaces, perfectoid Shimura varieties, and their connections to completed cohomology and Galois representations.

Alexandru Dimca

Algebraic Geometry · Université Nice Sophia Antipolis · *f*

Alexandru Dimca is studying the topology of complex algebraic varieties, smooth or singular, proper or not. The tools used come from mixed Hodge theory and algebraic topology. At IAS, he intends to focus on the fundamental groups of smooth quasi-projective varieties.

Alexei Entin

Number Theory · Institute for Advanced Study

Funding provided by the National Science Foundation

Alexei Entin is studying the distribution of zeros of L-functions over number fields and function fields and connections to random matrix theory. He also studies the function field analogues of classical problems in number theory, in particular the distribution of irreducible polynomials.

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j Joint Member School of Natural Sciences

Javier Fernandez De Bobadilla

Algebraic Geometry, Singularity Theory · Instituto de Ciencias Matemáticas, Consejo Superior de Investigaciones Científicas
AMIAS Member

Javier Fernandez De Bobadilla works on geometry and topology of algebraic varieties and singularities. Specifically, he is interested in vanishing topology, arc spaces, deformations, generalizations of McKay correspondence, normal surface singularities, and singularities of 3-folds.

Yuval Filmus

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

Yuval Filmus is interested in various aspects of theoretical computer science including computational complexity, proof complexity, algorithms, and analysis of Boolean functions. He also has a soft spot for combinatorics.

Joel Fish

Symplectic/Contact Topology, Hamiltonian Dynamics · Institute for Advanced Study

Joel Fish's research concerns symplectic topology and Hamiltonian dynamics with an emphasis on pseudoholomorphic curve techniques. While at the Institute, he will continue working on the restricted three-body problem, the Gottschalk conjecture, and the development of a bordered symplectic field theory.

Michael Forbes

Theoretical Computer Science, Pseudorandomness · Institute for Advanced Study · *s*
Funding provided by the National Science Foundation

Michael Forbes studies the intersection of randomness, algebra, and computation, with a particular focus on the explicit construction of pseudorandom objects in algebraic complexity theory.

Daniel Freed

Geometry and Physics · The University of Texas at Austin · *j, s*
IBM Einstein Fellow; additional funding provided by the James D. Wolfensohn Fund

Daniel Freed is working on aspects of topological field theory. Some of his current projects are broadly related on the one hand to six-dimensional superconformal field theory and on the other to phases in condensed matter physics. Others are related to invariants of three-dimensional manifolds.

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Lie Fu

Algebraic Geometry · Institute for Advanced Study · *f*

Funding provided by the National Science Foundation

Lie Fu is studying algebraic cycles, guided by the Bloch-Beilinson conjecture, and using techniques in Hodge theory, derived category, and motives. He is particularly interested in the case of varieties with trivial canonical bundle such as abelian varieties, Calabi-Yau varieties, and hyperkähler varieties.

Mark Goresky

Geometry, Automorphic Forms · Institute for Advanced Study

Funding provided by The Ambrose Monell Foundation and the Oswald Veblen Fund

Mark Goresky's main interest this year concerns a book, written jointly with Jayce Getz of McGill University, on Hilbert modular forms with coefficients in intersection homology, generalizing some well-known classical results of Fritz Hirzebruch and Don Zagier.

Richard M. Hain

Geometry, Topology · University of Washington and Duke University

Friends of the Institute for Advanced Study Member

Richard Hain's primary interest is the topology of complex algebraic varieties, especially their fundamental groups. He is especially interested in the topology, geometry, and arithmetic of moduli spaces of curves and moduli spaces of abelian varieties. At IAS, he plans to study motives associated to elliptic curves.

Christopher Hall

Number Theory · University of Wyoming · *vnf*

Funding provided by the National Science Foundation

Chris Hall calculates monodromy groups for compatible systems of mod-ell sheaves, e.g., torsion of abelian varieties over finitely generated fields. He also studies properties of compatible systems that are "independent of ell."

Daniel Halpern-Leistner

Algebraic Geometry, Representation Theory, Homological Algebra

Institute for Advanced Study

Funding provided by the National Science Foundation

Daniel Halpern-Leistner's research is focused on geometric invariant theory and its generalizations. Specifically, he studies structures in the equivariant derived category that arise in the context of geometric invariant theory. He is also interested in the geometry of algebraic stacks and the theory of deformation quantization.

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vf Veblen Fellow · *vri* Veblen Research Instructorship · *vnf* von Neumann Fellowship
j Joint Member School of Natural Sciences

Tara Holm

Symplectic Geometry · Cornell University · *vnf, f*
Funding provided by the National Science Foundation

Tara Holm is studying questions from symplectic geometry whose solutions involve methods from and have applications to algebraic geometry, algebraic topology, and combinatorics. The principal focus is on group actions and quotients. At IAS, she plans to work on several projects in these areas and on a book about equivariant symplectic geometry.

June Huh

Algebraic Geometry, Combinatorics · Institute for Advanced Study and Princeton University · *vf*
Funding provided by the Clay Mathematics Institute

June Huh applies algebraic geometry and singularity theory to problems in combinatorics and other areas. His recent interests include singularities of projective hypersurfaces, positivity of Chern classes of Schubert varieties, and connections between realizability problems in algebraic geometry and combinatorial geometry.

Klaus Hulek

Algebraic Geometry · Gottfried Wilhelm Leibniz Universität Hannover · *s*

Klaus Hulek studies algebraic geometry, with a focus on the geometry and topology of moduli spaces. He is investigating the stable cohomology of toroidal compactifications of the moduli spaces of abelian varieties, degenerations of intermediate Jacobians of cubic threefolds, and moduli spaces of polarized K3 surfaces and Enriques surfaces.

Christian Johansson

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

Christian Johansson is interested in algebraic number theory, primarily in the Langlands program. Most of his work concerns overconvergent automorphic forms, but he also plans to study the p-adic Langlands program while at IAS.

Junehyuk Jung

Analytic Number Theory, Spectral Geometry · Institute for Advanced Study
Funding provided by the National Science Foundation

Junehyuk Jung is studying asymptotic behavior of Maass-Hecke cusp forms in high-energy limit. Central objects of his research are nodal domains and nodal lines. At IAS, he aims to prove that the number of nodal domains tends to infinity with the eigenvalue, without assuming the Lindelöf hypothesis.

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Matt Kerr
Algebraic Geometry · Washington University in St. Louis
Matt Kerr is researching Hodge theory, algebraic cycles, and problems at the interface of these areas with mathematical physics, representation theory, and number theory.

Moritz Kerz
Arithmetic Geometry · Universität Regensburg · *s*
Moritz Kerz is working on Chow groups and K-theory classes of vector bundles on a proper flat family of varieties over a complete discrete valuation ring, and the difference of the cycle group on the special fiber from the cycle group on the generic fiber.

Nayoung Kim
Number Theory · Institute for Advanced Study
Funding provided by the National Science Foundation
Nayoung Kim is primarily interested in the arithmetic of elliptic curves, especially twists of elliptic curves. She is currently working on the 3-Selmer rank in families of cubic twists of elliptic curves over arbitrary number fields in relation to Hilbert's tenth problem.

Bruno Klingler
Hodge Theory, Algebraic Geometry, Arithmetic Groups · Institut de Mathématiques de Jussieu, Université Paris VII
Funding provided by the Ellentuck Fund and the Charles Simonyi Endowment
Bruno Klingler is interested in the topology of complex algebraic varieties, in particular the Hodge theoretic aspects of the representation theory of their fundamental groups. At IAS, he plans to work on the geometry of the Hodge locus for a general variation of Hodge structures.

Gillat Kol
Theory of Computation · Institute for Advanced Study
Funding provided by the National Science Foundation
Gillat Kol is studying complexity theory, with a focus on interactive proofs, probabilistically checkable proofs, and hardness of approximation.

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j Joint Member School of Natural Sciences

János Kollár
Algebraic Geometry · Princeton University
János Kollár's main interests are higher-dimensional birational geometry, rational curves on varieties, and moduli spaces, but he is also working on arithmetic problems, fundamental groups, real algebraic geometry, and applications to combinatorics.

Sándor J. Kovács
Algebraic Geometry · University of Washington · *f*
Funding provided by the James D. Wolfensohn Fund
Sándor Kovács works on higher-dimensional birational geometry, in particular, on moduli questions of higher-dimensional varieties. In addition, he is researching Kodaira-type vanishing theorems and their geometric applications. This work involves dealing with singular varieties and the relationships between various kinds of singularities one runs into in moduli theory.

Radu Laza
Algebraic Geometry · Stony Brook University, The State University of New York · *vnf, f*
Funding provided by the National Science Foundation
Radu Laza is primarily interested in the construction and compactification of moduli spaces. In particular, he is exploring the use of period maps to study moduli spaces in non-classical situations, such as moduli spaces of Calabi-Yau threefolds.

John Daniel Lesieutre
Algebraic Geometry · Institute for Advanced Study
Funding provided by the National Science Foundation
John Lesieutre is studying algebraic geometry with a focus on the minimal model program. He is particularly interested in the interplay between birational geometry and the dynamics of automorphisms of higher-dimensional varieties.

Michael Robert Magee
Automorphic Forms · Institute for Advanced Study
Funding provided by the National Science Foundation
Michael Magee is interested in interactions between number theory and spectral geometry. Two types of phenomena that particularly interest him are gaps in the spectrum of the Laplacian and the equidistribution of mass of eigenfunctions.

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j Joint Member School of Natural Sciences

Jasmin Matz
Automorphic Forms · Institute for Advanced Study · *s*
Funding provided by the National Science Foundation
Jasmin Matz's research focuses on the Arthur trace formula and its application to number theory. This includes obtaining a deeper understanding of the different parts of the trace formula to make it usable for applications. She also is interested in the relation between different kinds of trace formulas and certain zeta functions.

Luca Migliorini
Algebraic Geometry · Università di Bologna · *s*
Funding provided by the Giorgio and Elena Petronio Fellowship Fund
Luca Migliorini is planning to investigate the geometry of the moduli spaces appearing in the non-abelian Hodge theory, especially of algebraic curves. In particular, he will focus on the so-called P=W conjecture, asserting the equality of two filtrations (weight and perverse) of different origin on the cohomology groups of these spaces.

Irina Mitrea
Analysis · Temple University · *vnf*
Funding provided by the National Science Foundation
Irina Mitrea is working at the interface between harmonic analysis, partial differential equations, geometric measure theory, and several complex variables. At IAS, she plans to work, among other things, on developing a multiple layer potential theory for higher-order elliptic partial differential equations in uniformly rectifiable domains.

Fabien Morel
Algebraic Topology, Algebraic Geometry · Ludwig-Maximilians-Universität München
Funding provided by the The Bell Companies Fellowship Fund and the Ellentuck Fund
Fabien Morel is developing methods of algebraic topology in algebraic geometry through A^1-homotopy theory. He is studying A^1-homotopy types of geometric classifying spaces of algebraic groups. A related application is the Friedlander-Milnor conjecture on the homology of groups of the form G(F) for F algebraically closed, which uses A^1-homotopy theory and a dévissage method involving buildings of split semi-simple F-groups.

Joanna Nelson
Symplectic and Contact Topology · Institute for Advanced Study
Funding provided by The Bell Companies Fellowship Fund
Jo Nelson is researching symplectic and contact topology. She is interested in the relationships between symplectic and contact homology theories. While at the Institute, she plans to work on providing precise foundations and concrete examples of computations.

f First Term · *s* Second Term · *v* Visitor · *vp* Visiting Professor · *dvp* Distinguished Visiting Professor
vf Veblen Fellow · *vri* Veblen Research Instructorship · *vnf* von Neumann Fellowship
j Joint Member School of Natural Sciences

Madhav Nori
Algebraic Geometry · The University of Chicago · *f*
Madhav Nori is studying the topology of varieties, arithmeticity of monodromy, Kimura finiteness, K-theory, and higher Chow groups.

Kieran O'Grady
Algebraic Geometry · Università degli Studi di Roma, La Sapienza · *f*
Funding provided by the Giorgio and Elena Petronio Fellowship Fund
Kieran O'Grady is researching hyperkähler varieties and Chow rings.

Ania Agata Otwinowska
Algebraic Geometry · Université Paris-Sud 11 · *v*
At IAS, Ania Otwinowska plans to work on Hodge theory and motives.

Ivan Panin
Algebra · Steklov Mathematical Institute, Russian Academy of Sciences · *s*
Ivan Panin is working to prove jointly with Grigory Garkusha the following result theorem. Let F be a Fr_★ (presheaf of abelian groups in the sense of an unpublished work of Voevodsky). Assume that F is stable and homotopy invariant. Then, (1) the associated Nisnevich sheaf F_Nis is stable and homotopy invariant; (2) for all integer *p* the presheaves H^*p* (—, F_Nis) are homotopy invariant and stable.

Ori Parzanchevski
Algebra, Combinatorics · Institute for Advanced Study
Funding provided by the National Science Foundation
Ori Parzanchevski is interested in applications of groups and representation theory to combinatorics and geometry. Currently, he is studying spectral theory and combinatorics of simplicial complexes. In addition, he has been working on word maps in finite groups, isospectrality in discrete and Riemannian settings, and semistability in Euclidean lattices.

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Amit Patel
Applied Topology · Institute for Advanced Study
Funding provided by the National Science Foundation
Amit Patel has focused on building a sheaf theoretic interpretation of persistent homology for stratified maps. While at the Institute, he plans to apply this work to dynamical systems.

Sam Payne
Algebraic Geometry · Yale University · *vnf, s*
Funding provided by the National Science Foundation
Sam Payne is studying the geometry and topology of algebraic varieties, especially using combinatorial techniques and relations to nonarchimedean analytic and tropical geometry.

Ana Pires
Symplectic Geometry · Institute for Advanced Study · *f*
Funding provided by the National Science Foundation
Ana Pires is working on symplectic geometry, in particular, Hamiltonian group actions on symplectic manifolds and on manifolds with a symplectic structure with controlled singularities. At IAS, she plans to study connections with and applications to toric geometry and topology.

Kartik Prasanna
Number Theory · University of Michigan · *vnf*
Funding provided by the National Science Foundation
Kartik Prasanna's main interests are the arithmetic of automorphic forms, including periods and special values of L-functions and p-adic L-functions. He is also interested in relations between L-functions and algebraic cycles and the conjectures of Beilinson and Bloch, especially for motives associated with automorphic forms.

Doron Puder
Combinatorics, Combinatorial and Geometric Group Theory · Institute for Advanced Study
Funding provided by the National Science Foundation
Doron Puder is interested in many aspects of free groups (word maps, representations, AutF), as well as the study of spectrum of graphs (expansion of random graphs, expansion in Cayley graphs, Ramanujan graphs). He is also interested, although less involved in, other areas of geometric group theory.

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Ran Raz

Computational Complexity · Weizmann Institute of Science · *vp*
Funding provided by the Simons Foundation and the National Science Foundation

Ran Raz's main research area is complexity theory, with emphasis on proving lower bounds for computational models. More specifically, he is interested in Boolean and arithmetic circuit complexity, communication complexity, propositional proof theory, probabilistically checkable proofs, quantum computation and communication, and randomness and derandomization.

Michael Reiterer

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

Michael Reiterer's research focuses on the partial differential equations of general relativity and Einstein's theory of gravity. He would like to better understand the Belinski-Khalatnikov-Lifshitz (BKL) singularity scenario and the critical gravitational collapse phenomena that were discovered by Choptuik in numerical experiments.

Timothy Riley

Geometric Group Theory · Cornell University · *f*

Timothy Riley is studying how geometric, topological, and algebraic perspectives on infinite discrete groups interact. At IAS, he plans to investigate the geometry of discs spanning loops in spaces associated to groups, the conjugacy problem, and the extent to which results about hyperbolic 3-manifolds carry over to hyperbolic groups.

Noga Ron-Zewi

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

Noga Ron-Zewi is interested in theoretical computer science and its interactions with modern research directions in discrete mathematics. A unifying theme in her work is the use of methods and techniques from the mathematical field of additive combinatorics for making progress on open problems in computational complexity, most notably in the subfields of pseudorandomness, communication complexity, and local decoding.

Giulia Saccà

Algebraic Geometry · Institute for Advanced Study
Funding provided by the Giorgio and Elena Petronio Fellowship Fund II and the National Science Foundation

Giulia Saccà's research focuses on holomorphic symplectic and Calabi-Yau varieties and on moduli spaces of sheaves on surfaces. More specifically, she is interested in the geometry and topology of such moduli spaces and of symplectic singularities and their resolutions, and in abelian fibrations structures on holomorphic symplectic or Calabi-Yau varieties.

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Nicholas Sheridan
Symplectic Geometry · Institute for Advanced Study and Princeton University · *vri*
Funding provided by the National Science Foundation
Nick Sheridan works on symplectic geometry, especially homological mirror symmetry. While at the Institute, he plans to use tropical geometry to study invariants of symplectic manifolds, such as symplectic cohomology and the Fukaya category.

Carlos Tschudi Simpson
Moduli Spaces and Higher Categories · CNRS, Université Nice Sophia Antipolis · *s*
Carlos Simpson is researching the moduli spaces of sheaves and connections, non-abelian Hodge theory, WKB asymptotics, and harmonic maps to buildings, and the relationships between all these things and higher categories.

Christopher Skinner
Number Theory · Princeton University · *v, f*
Christopher Skinner's research focuses mainly on Galois representations and automorphic forms and their applications to algebraic number theory, especially special values of L-functions.

Florian Sprung
Number Theory · Institute for Advanced Study · *vri*
Florian Sprung works in number theory and is exploring how families of special values of L-functions relate to families of algebraic objects. In graduate school, his work focused on the Iwasawa theory of elliptic curves.

Vasudevan Srinivas
Algebraic Geometry · Tata Institute of Fundamental Research, Mumbai · *s*
Vasudevan Srinivas is interested in algebraic cycles. He plans to continue working on extending recent work with Rosenschon on the relations with étale motivic cohomology. He also plans to take up some new questions related to the conjectural relation between cycles and L-functions.

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Lenny Taelman
Number Theory · Universiteit Leiden · *vnf, s*
Funding provided by the National Science Foundation
Lenny Taelman is working on characteristic classes for curves of genus one and moduli of curves of genus one.

Zhiyu Tian
Algebraic Geometry · Institute for Advanced Study · *s*
Funding provided by the National Science Foundation
Zhiyu Tian is researching rationally connected varieties, their geometry, topology, and arithmetic.

Burt Totaro
Algebraic Geometry · University of California, Los Angeles
Funding provided by The Ambrose Monell Foundation and the Friends of the Institute for Advanced Study
Burt Totaro is working on algebraic geometry, especially in the theory of algebraic cycles. The Hodge conjecture is one of the main motivations for his work, and he often brings topological methods into algebraic geometry. He is participating in the Institute's special year on "The Topology of Algebraic Varieties."

Karen Uhlenbeck
Gauge Theory · The University of Texas at Austin · *v*
Karen Uhlenbeck primarily works in the area of geometric partial differential equations. She has worked in the areas of the calculus of variations, minimal surfaces, harmonic maps, gauge theory, and integrable systems. She is currently interested in flat complex connections and moduli spaces of geometric structures on complex connections.

Charles Vial
Algebraic Geometry · University of Cambridge · *s*
Charles Vial is studying algebraic cycles, motives, and hyperkähler varieties.

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Claire Voisin

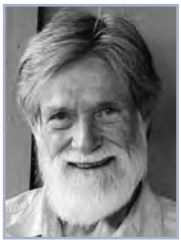
Complex Algebraic Geometry, Hodge Theory · Université Paris-Saclay · *dvp*
Funding provided by the Fernholz Foundation and the Charles Simonyi Endowment

In 2004, Claire Voisin constructed compact Kähler manifolds not homotopically equivalent to a projective variety. Her present interests include cohomological/Chow theoretic birational invariants of algebraic varieties, and the Bloch-Beilinson conjectures relating Hodge theory and Chow groups.

Yi Wang

Geometric Analysis, Harmonic Analysis · Institute for Advanced Study
Funding provided by the National Science Foundation

Yi Wang is interested in conformal geometry, fully nonlinear partial differential equations, and harmonic analysis. She is studying different types of isoperimetric inequalities.



Robert F. Williams

Topology, Dynamical Systems · The University of Texas at Austin · *v*

Robert Williams is a topologist working specifically in dynamical systems. Recently, he has worked in tiling theory. This, and perhaps some work in knotted periodic orbits of ordinary differential equations in three dimensions, will probably be his concern while at the Institute.

Krzyztof Wysocki

Symplectic Geometry, Contact Geometry, Hamiltonian Dynamics · The Pennsylvania State University · *s*

Kris Wysocki is working on a polyfold theory and a generalized Fredholm theory on polyfolds. At the Institute, he plans to work on applications of polyfold theory to the Gromov-Witten theory and the symplectic field theory.

Bin Xu

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

Bin Xu is working on extending Arthur's endoscopic classification theory of representations of symplectic groups and orthogonal groups to the similitude groups. In his thesis, he mainly treated the tempered case, and he intends to establish the complete theory during his stay at IAS.

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Chenyang Xu

Algebraic Geometry · Beijing University · *f*

Funding provided by the S. S. Chern Foundation for Mathematics Research Fund, the Ky Fan and Yu-Fen Fan Membership Fund, and the National Science Foundation

Chenyang Xu is working on algebraic geometry, in particular, birational geometry. At IAS, he plans to study the arithmetic theory of rationally connected varieties. He also plans to work on topics related to the minimal model program.

Hang Xue

Number Theory, Arithmetic Geometry · Institute for Advanced Study

Funding provided by the National Science Foundation

Hang Xue is interested in number theory and arithmetic geometry. He is currently studying the Gan-Gross-Prasad conjecture using the relative trace formula and theta correspondences.

Matthew Patrick Young

Analytic Number Theory · Texas A&M University · *vnf, f*

Funding provided by the National Science Foundation

Matthew Young's research has largely concentrated on mean values of L-functions and connections with automorphic forms and equidistribution. At the Institute, he plans to study some analytic problems with automorphic forms on higher-rank groups.

Hong Run Zong

Algebra · Institute for Advanced Study

Funding provided by the National Science Foundation

Hong Run Zong is studying the geometry and topology of algebraic varieties in relation to arithmetic.

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School of Natural Sciences

Administrative Officer: Michelle Sage

Executive Director and Administrator
The Simons Center for Systems Biology: Suzanne P. Christen

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, 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 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.

Peter Goddard

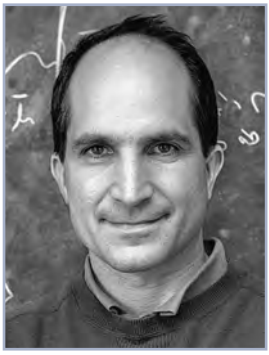
Professor · Mathematical Physics

Peter Goddard's research concerns quantum field theory and string theory. With his collaborators, he has made pioneering contributions to these areas, including string quantization and its consistency, 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, 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.

Stanislas Leibler

Professor · Biology

Stanislas Leibler has made important contributions to theoretical and experimental biology, successfully extending the interface between physics and biology to develop new solutions and approaches to problems. Interested in the quantitative description of microbial systems, both on 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

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

Professor · Mathematical Physics

Nathan Seiberg's research focuses on various aspects of string theory, quantum field theory, and particle physics. His work has shed light on the worldsheet description of string theory as a two-dimensional conformal field theory and its space-time manifestations. Seiberg has contributed to the understanding of the dynamics of quantum field theories, especially supersymmetric quantum field theories. His exact solutions of such theories have uncovered many new and unexpected insights, including the fundamental role of electric-magnetic duality in these theories. These exact solutions have led to many applications in physics and in mathematics. He has also clarified how supersymmetry can be dynamically broken, and has explored the phenomenological consequences of supersymmetry breaking. These consequences will be tested at the Large Hadron Collider.

Scott Tremaine

Richard Black Professor · 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 (Professor Emeritus, School of Natural Sciences), 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

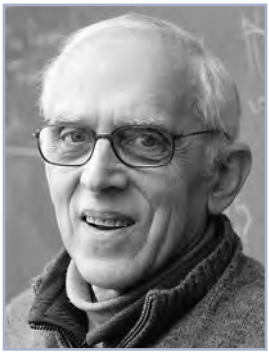
Charles Simonyi Professor · Mathematical Physics

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.

Matias Zaldarriaga

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. His recent research has focused on intergalactic hydrogen gas in the early universe, and he is at the forefront of developing machinery to study this gas using the spectral line from neutral hydrogen at 21-centimeter wavelength.



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 some of his 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 numerical integration, and is currently exploring a particle unification model based on boson-fermion balance without full supersymmetry.

Freeman J. Dyson

Professor Emeritus · Mathematical Physics and Astrophysics

Freeman Dyson's work on quantum electrodynamics marked an epoch in physics. The techniques he used in this domain form the foundation for most modern theoretical work in elementary particle physics and the quantum many-body problem. He has made highly original and important contributions to an astonishing range of topics, from number theory to adaptive optics. His most recent research, in collaboration with William Press of the University of Texas, found new strategies for Prisoners' Dilemma, a game used by population biologists as a model for the evolution of cooperation.

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 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 and heads the Simons Center for Systems Biology at the Institute, which concentrates on research at the interface of molecular biology and the physical sciences: on genetics and genomics, polymorphisms and molecular aspects of evolution, signal transduction pathways and networks, stress responses, and pharmacogenomics in cancer biology.

Victor Alexandrov
Biology · Institute for Advanced Study
Victor (Vitya) Alexandrov is interested in several topics in biophysics, especially evolutionary biology and big data problems. He plans to work on topological approaches to evolutionary networks.

Dionysios Anninos
Quantum Gravity · Stanford University
Martin A. and Helen Chooljian Founders' Circle Member; additional funding provided by the National Science Foundation
Dionysios Anninos is studying how holographic notions are applied to cosmological spacetimes such as an expanding universe. He also studies the structure of black holes, as well as geometries containing multiple, fragmented horizons. Both subjects have curious connections to the physics of glasses, which he is currently exploring.

Tobias Baldauf
Cosmology · Institute for Advanced Study
Corning Glass Works Foundation Fellowship
Tobias Baldauf is interested in using the large-scale structure of the universe to provide answers to fundamental questions in physics. In particular, he is trying to understand how matter distribution evolves from linear initial conditions, where galaxies form, and how fundamental physics and initial conditions imprint themselves on the final galaxy clustering pattern.

Till Bargheer
Quantum Field Theory, String Theory · Institute for Advanced Study
European Commission Marie Curie Fellowship
Till Bargheer studies the hidden symmetries and integrable structures that emerge in maximally supersymmetric Yang-Mills theory and its string dual. In particular, he wants to understand how correlation functions, scattering amplitudes, and Wilson loops in the planar theory are governed by the strong constraints imposed by integrability.

Christopher John Beem
Theoretical Physics · Institute for Advanced Study
Frank and Peggy Taplin Member; additional funding provided by the National Science Foundation
Christopher Beem studies quantum field theory and string theory, with an emphasis on the geometric structures that play a role in each. His present work includes the application of conformal bootstrap techniques to superconformal field theories.

Eric Blackman

Astrophysics · University of Rochester
IBM Einstein Fellow

Eric Blackman's research spans stellar, planetary, galactic, and high-energy astrophysics. Magnetic fields and plasmas are often common themes in his work. Current projects include building on his recent work elucidating principles of large-scale magnetic field growth with a generalized mean field accretion disk theory that includes consequences of nonlocal magnetic transport.

Kfir Blum

Particle and Astroparticle Physics · Institute for Advanced Study · *m*
John N. Bahcall Fellow; additional funding provided by the United States–Israel Binational Science Foundation and the U.S. Department of Energy

Kfir Blum's research interests include particle physics, in particular supersymmetry and Higgs physics; cosmological problems, such as dark matter and the baryon asymmetry of the universe; and cosmic ray physics and indirect astrophysical probes for dark matter.

Jo Bovy

Cosmology, Astrophysics · Institute for Advanced Study · *m*
John N. Bahcall Fellow; additional funding provided by the W. M. Keck Foundation Fund

Jo Bovy works on various topics in astrophysics and cosmology. He is particularly interested in the formation and evolution of galaxies. While at the Institute, he will study the dynamics and structure of the Milky Way.

Timothy David Brandt

Astrophysics · Institute for Advanced Study
NASA Exoplanet Science Institute Carl Sagan Fellowship

Recent technological advances enable us to directly image the most massive exoplanets around nearby young stars. Timothy Brandt is interested in the hardware and image processing needed to see smaller and fainter planets and, ultimately, another Earth. He also plans to use statistics to constrain these exoplanets' properties and demographics.

Matthew Bullimore

Quantum Field Theory · Perimeter Institute for Theoretical Physics
Martin A. and Helen Chooljian Member; additional funding provided by the National Science Foundation

Matthew Bullimore plans to study the connections between supersymmetric gauge theories, integrable systems, and geometric representation theory. He is also interested in mathematical structures in scattering amplitudes.

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jvp Junior Visiting Professor · *ra* Research Associate · *j* Joint Member School of Mathematics

Gustavo Burdman

Particle Physics · University of São Paulo · *s*
Funding provided by The Ambrose Monell Foundation

Gustavo Burdman is researching extensions of the Standard Model of particle physics that can solve some of the theory's problems, including the origin of flavor, the hierarchy problem, and the nature of dark matter. He is currently studying quantum field theories that can be obtained from the deconstruction of extradimensional theories, in order to apply them to model-building in particle physics as well as other physical systems.

Bernard Chazelle

Biology · Princeton University
Addie and Harold Broitman Member in Biology

Is there any benefit to be gained from looking at living organisms through an "algorithmic" lens? The question is timely because of the growing sense among scientists that the language of differential equations lacks the expressiveness required for a modern theory of living matter. Can the study of natural algorithms help? Bernard Chazelle will seek the answer at IAS.

Timothy Cohen

Particle Physics · SLAC National Accelerator Laboratory · *v*

Timothy Cohen is studying physics beyond the Standard Model, with an emphasis on Large Hadron Collider phenomenology and understanding the nature of dark matter. He is also investigating the physics capabilities of a future 100 TeV proton collider. Finally, he plans to continue to apply modern, effective field theory techniques to dark matter phenomenology.

Raffaele Tito D'Agnolo

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

Raffaele D'Agnolo's research interests cover different aspects of particle phenomenology and experimental high-energy physics, including Higgs and flavor physics, supersymmetry, and collider searches at high jet multiplicities.

Neal Dalal

Astrophysics · University of Illinois at Urbana-Champaign · *jvp, s*
AMIAS Member

Neal Dalal's work is mainly in cosmology, with a focus on the formation of cosmic structure on both large scales and small scales. At the Institute, he plans to work on neutrino effects on large-scale structure, cosmic voids, and gravitational lensing.

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jvp Junior Visiting Professor · *ra* Research Associate · *j* Joint Member School of Mathematics

Tudor Dan Dimofte

Mathematical and Particle Physics · Institute for Advanced Study · *m*

Funding provided by the European Research Council and the U.S. Department of Energy

Tudor Dimofte studies various topics in string theory and quantum field theory, ranging from quantum states of black holes to dynamics of gauge theories. He is interested in building new, mutually beneficial connections between physics and mathematics, especially in the fields of algebraic geometry and knot theory.

Michael Dine

Theoretical Particle Physics · University of California, Santa Cruz · *vp, s*

Funding provided by The Ambrose Monell Foundation

At the Institute, Michael Dine anticipates working on questions of inflationary cosmology and the physics of the Large Hadron Collider. He also expects to explore issues in quantum field theory and string theory.

Daniel Freed

Geometry and Physics · The University of Texas at Austin · *j, s*

IBM Einstein Fellow; additional funding provided by the James D. Wolfensohn Fund

Daniel Freed is working on aspects of topological field theory. Some of his current projects are broadly related on the one hand to six-dimensional superconformal field theory and on the other to phases in condensed matter physics. Others are related to invariants of three-dimensional manifolds.

Abhijit Gadde

Theoretical Physics · California Institute of Technology

Funding provided by the Raymond and Beverly Sackler Foundation Fund and the National Science Foundation

Abhijit Gadde is interested in understanding strongly coupled quantum field theories as well as conformal field theories. Most of his work has focused on exact computations in supersymmetric field theories. The interplay of physics and mathematics fascinates him.

Vera Gluscevic

Cosmology, Astrophysics · Institute for Advanced Study

Friends of the Institute for Advanced Study Member

Vera Gluscevic's research focuses on using the cosmic microwave background to test physical theories, including those invoked to explain dark energy and inflation. She is also investigating a range of other topics, such as the direct detection of dark matter, probes of reionization, and the origins of magnetic fields in the universe.

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jvp Junior Visiting Professor · *ra* Research Associate · *j* Joint Member School of Mathematics

Johannes Henn

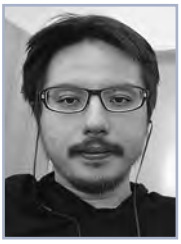
Particle Physics · Institute for Advanced Study · *m*
Marvin L. Goldberger Member; additional funding provided by the U.S. Department of Energy

Johannes Henn's research focuses on supersymmetric quantum field theory and its relation to string theory. He is working on recently discovered dualities between scattering amplitudes, correlation functions of local operators, and Wilson loops with the aim of finding new hidden structures in the weak and strong coupling description of these objects.

Anson Hook

Particle Physics · Institute for Advanced Study
Funding provided by the U.S. Department of Energy

Anson Hook works on various aspects of particle physics, including supersymmetry and collider physics. His interests range from optimizing Large Hadron Collider search strategies for new physics to general properties of quantum field theories.



Yu-tin Huang

Particle Physics · Institute for Advanced Study

Yu-tin Huang's research focuses on general aspects of scattering amplitudes for quantum field theories in diverse dimensions. He plans to study the interplay between gravitational and gauge theory amplitudes, in addition to clarifying the constraints that consistency conditions of low-energy scattering amplitudes impose on ultraviolet completion.

Johan Carl Gunnar Källén

Theoretical Physics · Université de Genève
Funding provided by the Swedish Research Council

Johan Källén is studying different aspects of quantum field theory and string/M-theory. He is particularly interested in obtaining exact results for supersymmetric gauge theories in the context of the gauge/gravity correspondence and in understanding the non-perturbative structure of topological strings.

Hyung Do Kim

Particle Physics · Seoul National University
IBM Einstein Fellow

It was long anticipated that there would be new physics around the weak scale, and the absence of any signatures from the Large Hadron Collider is a big puzzle. At IAS, Hyung Do Kim plans to reexamine the physics underlying the electroweak symmetry breaking and to study the properties of dark matter related to the Higgs boson.

f First Term · *s* Second Term · *m* Long-term Member · *v* Visitor · *vp* Visiting Professor
jvp Junior Visiting Professor · *ra* Research Associate · *j* Joint Member School of Mathematics

Shinta Kobayashi
Biology · Chugai Pharmaceutical Co., Ltd., Japan · *v*
Shinta Kobayashi works in the fields of cancer and stem cells. He plans to establish stem cell–derived cancer organoid models that have the potential to improve preclinical testing and validation of anti-tumor drugs.

Bence Kocsis
Astrophysics · Institute for Advanced Study
Funding provided by NASA
Bence Kocsis is interested in using black holes as astrophysical laboratories to understand general relativity, accretion processes, disk-satellite interactions, and the corresponding observational signatures in electromagnetic and gravitational wave bands. He plans to study dense stellar systems hosting black holes and explore connections with statistical mechanics and condensed matter physics.

Dmitry Krotov
Biology · Institute for Advanced Study
Charles L. Brown Member in Biology
Dmitry Krotov is a physicist studying various problems in theoretical and computational biology. The central theme that runs through his research is the impact of microscopic noise on the collective properties of biological systems at the "network" level. He is interested in both purely theoretical problems and data-motivated questions.

Doron Kushnir
Astrophysics · Institute for Advanced Study
Friends of the Institute for Advanced Study Member
Doron Kushnir's areas of interest include various problems within the field of high-energy astrophysics and, in particular, deflagration-to-detonation transitions in supernova explosions of type Ia and nonthermal processes in galaxy clusters.

Brian Lacki
Astrophysics · Institute for Advanced Study · *m*
Radio waves and gamma rays from galaxies come from cosmic rays, highly relativistic particles. Brian Lacki's research involves understanding this radiation by mapping the cosmic rays, especially in radio, as well as galactic magnetic fields, and determining whether this radiation makes up the cosmic backgrounds of radio waves and gamma rays.

Paul Langacker

Particle Physics · Institute of Advanced Study · *v*

Paul Langacker will explore the physics implications of concrete string constructions. This will include possibilities for extended gauge, Higgs, fermion, quasi-hidden sectors for collider physics, and nonstandard mechanisms for generating neutrino mass. He is also completing an advanced textbook on the Standard Model and beyond.

Marta Luksza

Biology · Institute for Advanced Study · *ra*

Marta Luksza is interested in questions at the interface of computer science, information theory, and biology. She is studying the evolution of viruses to understand the patterns of adaptation on the genetic and phenotypic levels.

Mehrdad Mirbabayi

Astrophysics · Institute for Advanced Study

Funding provided by the National Science Foundation

Mehrdad Mirbabayi's research focuses on early universe cosmology and the theory of gravity, particularly the effective field theory of inflation, infrared modifications of gravity, and the field theoretic description of fluids and condensed media. Recently, he has been working on S-matrix theory and the flat space limit of AdS/CFT correspondence.

Kohta Murase

Astroparticle Physics · Institute for Advanced Study

Space Telescope Science Institute Hubble Fellow

Kohta Murase works on revealing the origins and understanding the underlying mechanisms of high-energy particles propagating in the universe. In particular, he intends to continue his study of violent cosmic explosions, including gamma-ray bursts and supernovae. He is also interested in exploring novel probes of dark matter and cosmic rays.

James Owen

Astrophysics · Canadian Institute for Theoretical Astrophysics

Space Telescope Science Institute Hubble Fellow

James Owen is interested in star and planet formation, in particular the interaction between the parent star, the planet-forming disc, and planets themselves. His research plans include understanding exoplanet structure and evolution along with the final stages of planet formation.

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jvp Junior Visiting Professor · *ra* Research Associate · *j* Joint Member School of Mathematics

Sonia Paban
Particle Physics · The University of Texas at Austin · *s*
At IAS, Sonia Paban is working on finding observables that distinguish different initial conditions of inflation, as well as finding better estimates of tunneling rates in multifield spaces.

Luca Peliti
Biology · Sezione di Napoli, Istituto Nazionale di Fisica Nucleare
Luca Peliti is interested in the physical processes of thermodynamic equilibrium based on information handling that relate to the basic workings of life—maintenance, growth, and reproduction. He plans to exploit the recent progresses in nonequilibrium statistical mechanics to obtain a more fundamental understanding of their behavior from a physical point of view.

Rami Pugatch
Biology · Institute for Advanced Study · *ra*
Rami Pugatch's research focuses on how cells process external information to grow while maintaining their metabolic homeostasis. He is interested particularly in the inherent tension between efficiency (yield) and growth rate and the way it is regulated as a function of the available information.

Loganayagam Ramalingam
Particle Physics · Institute for Advanced Study
Funding provided by the U.S. Department of Energy
Loganayagam Ramalingam is studying high-energy physics, strongly correlated electrons, and nuclear theory.

Nir Shaviv
Astrophysics · The Hebrew University of Jerusalem
IBM Einstein Fellow
Nir Shaviv is interested in a range of problems in astrophysics and climate research. At the Institute, he plans to concentrate on cosmic ray diffusion in the dynamic galaxy, the solar cosmic ray–climate link, and the appearance of extremely luminous (super-Eddington) states in stellar evolution.

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David Simmons-Duffin
Particle Physics · Institute for Advanced Study
William D. Loughlin Member; additional funding provided by the U.S. Department of Energy

David Simmons-Duffin's work concerns conformal field theories in diverse dimensions with interest in both their phenomenological applications and implications for quantum gravity.

Marko Simonović
Cosmology · Scuola Internazionale Superiore di Studi Avanzati, Trieste

Marko Simonović is working on different aspects of theoretical cosmology, including inflation, primordial non-Gaussianities, and large-scale structure. At the Institute, he plans to focus on the study of large-scale structure as a tool to investigate statistics of the initial conditions and possible modifications of gravity.

David Spergel
Theoretical Astrophysics · Princeton University · *v, f*

David Spergel's work focuses on addressing wide-ranging questions in cosmology and astrophysics: What is the size and shape of the universe? Is the universe finite? What is the dark matter and dark energy that comprise most of the mass of the universe? How do galaxies form and what determines their properties? Did life originate on Earth or come from nearby stars?

Douglas Stanford
Theoretical Physics · Stanford University
Funding provided by the National Science Foundation and the Paul Dirac Fund

Douglas Stanford is studying quantum gravity, quantum field theory, and string theory. He has worked on the AdS/CFT description of black hole interiors and the relationship to chaotic dynamics in quantum field theory.

Rashid Sunyaev
Astrophysics · Max-Planck-Institut für Astrophysik · *vp*
Maureen and John Hendricks Visiting Professor

Rashid Sunyaev has made major contributions in the fields of physical cosmology and high-energy astrophysics. His current research interests include the cosmological recombination of hydrogen and helium, the physics of gas accretion onto neutron stars and black holes, the problem of matter, and radiation interaction under extreme astrophysical conditions.

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Tsvi Tlusty

Biology · Institute for Advanced Study · *m*
Martin A. and Helen Chooljian Member in Biology

Tsvi Tlusty is interested in what distinguishes living matter from the lifeless and looking at living systems as evolvable molecular information processors. He is focused on how the function of proteins as information channels that operate under distinct biochemical constraints may explain the unique physical properties of this state of matter.

David Vegh

Particle Physics · CERN
CERN Fellowship

David Vegh is interested in various aspects of quantum field theory, emergent phenomena at non-zero density, non-equilibrium systems, black hole physics, and string theory.

Aron Wall

Particle Physics, Gravity · University of California, Santa Barbara
Funding provided by the National Science Foundation

Aron Wall studies the thermodynamics of black holes and other horizons, mostly by proving theorems which connect gravity to information theory. He would like to understand what to postulate about the microstates of quantum gravity in order to get these thermodynamics principles to naturally arise.

Brian M. Willett

Particle Physics · Institute for Advanced Study
Roger Dashen Member; additional funding provided by the U.S. Department of Energy

Brian Willett's research interests focus on quantum field theory and string/M-theory. In particular, he studies nonperturbative techniques in quantum field theories in order to understand strong-coupling phenomena such as dualities, a subject that has strong interactions with string/M-theory.

BingKan Xue

Biology · Institute for Advanced Study
Eric and Wendy Schmidt Member in Biology

BingKan Xue works in systems biology and studies the evolutionary mechanisms for microbial populations to adapt to varying environments. He is interested in theorizing the possibility and advantage of inducing phenotypic variations and carrying nongenetic inheritance in response to sudden environmental stress.

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jvp Junior Visiting Professor · *ra* Research Associate · *j* Joint Member School of Mathematics

Masahito Yamazaki
Particle Physics · Institute for Advanced Study

Masahito Yamazaki is working on theoretical high-energy physics, particularly supersymmetric gauge theories and string theory. Recently, he has been studying exact results in supersymmetric gauge theories and mathematical structures therein.

Kazuya Yonekura
Particle Physics · Institute for Advanced Study
Funding provided by the U.S. Department of Energy

Kazuya Yonekura's research concerns quantum field theory and particle physics phenomenology. He mainly is interested in studying strong dynamics of supersymmetric gauge theories and their applications to models beyond the Standard Model.

School of Social Science

Administrative Officer: Donne Petito

Founded in 1973, the School of Social Science takes as its mission the analysis of societies and social change. It is devoted to a multidisciplinary, comparative, and international approach to social research.

Professors of the School have participated actively in the most important contemporary debates about the meaning of the "interpretive turn" in anthropology, history, and political theory; about the centrality of culture, language, ritual, and moral understandings in the study of society; about the character and direction of social change; about the explanatory power of rational choice in the analysis of political decision-making and economic exchange; and about the epistemological and theoretical issues related to critical thinking. Although each is rooted in his or her own discipline, all do work that transcends disciplinary boundaries. The School operates under the guiding principles of informality and collegiality and with a shared understanding that the social sciences are not to be narrowly defined. Each year, the School brings together scholars from various fields—including political science, economics, law, psychology, sociology, anthropology, history, philosophy, and literary criticism—to examine historical and contemporary problems.

In an attempt to create a sense of community among the Members, the School designates an annual theme, which is neither exclusive nor excluding. The theme for the 2014–15 academic year is "Egalitarianisms." Insofar as the purpose of democracy is to empower individual citizens and give them sufficient control over their lives to protect themselves against domination, the core ideal of democracy is political equality. We have come to think of this ideal as consisting primarily of voting rights and the right to run for elected office. These political rights are, of course, fundamental. The carceral state draws our attention to that point, but voting rights are only one of the instruments available to be directed toward the egalitarian empowerment of a citizenry. How do political, social, and economic equality (and the corresponding inequalities) relate to each other? Are they separable or necessarily interdependent? In the current context, how do forms of global governance and democratic deficits relate to projects of empowerment at other levels? How have notions of empowerment differed in different historical and cultural contexts? Is it possible to articulate a clear definition of equality or should we think in terms of varying languages of egalitarianism? What have been the critiques of political equality? Must egalitarianism be understood in relation to democracy? How should we think about non-democratic egalitarianism? The seminar exploring these questions will be led by UPS Foundation Professor Danielle S. Allen.

Danielle S. Allen

UPS Foundation Professor

Danielle Allen is a political theorist who has published broadly in democratic theory, political sociology, and the history of political thought. As a democratic theorist and historian of political thought, she investigates core values such as equality, non-domination or freedom, and trustworthiness. As a political sociologist, she analyzes relations among legal structures, political values, and power dynamics, as well as foundational practices such as punishment, deliberation, opinion formation, and citizenship generally. She is currently working on books on citizenship in the digital age and political equality.

Didier Fassin

James D. Wolfensohn Professor

Didier Fassin is an anthropologist and a sociologist who has conducted fieldwork in Senegal, Ecuador, South Africa, and France. Trained as a physician in internal medicine and public health, he dedicated his early research to medical anthropology, illuminating important dimensions of the AIDS epidemic, mortality disparities, and global health. More recently, he has developed the field of critical moral anthropology, which explores the historical, social, and political signification of moral forms involved in everyday judgment and action as well as international relations. He is currently conducting an ethnography of the state, through a study of police, justice, and prison, and analyzes the possible contribution of the social sciences to a public debate regarding security, punishment, and inequality.

Dani Rodrik

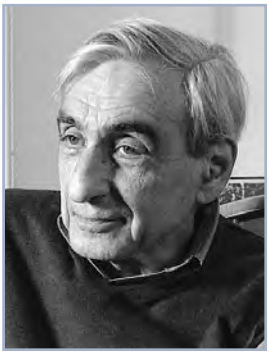
Albert O. Hirschman Professor

Dani Rodrik is an economist whose work bridges the realms of theory and public policy by combining rigorous research with an innovative examination of ideas across the field of economics—from the consequences of globalization to the role of national institutions, the challenges of inequality, and the tensions between the market and the state. Rodrik's current research centers on the future of economic growth and the role of ideas in political economy. He maintains that successful institutional design is customizable, underpinned by effective basic principles but flexible in implementation, taking into account local conditions.

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. Her recent books have focused on the vexed relationship of the particularity of gender to the universalizing force of democratic politics. More 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.



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. In addition to writing frequently about war and terrorism, he is currently addressing questions of pluralism, ethnicity, cultural rights, and multiculturalism. He continues to work on volumes three and four of a major collaborative project focused on the history of Jewish political thought.

Tugba Basaran

Political Science · University of Kent · *v*

Tugba Basaran is seeking to uncover techniques of inducing and normalizing collective indifference to human suffering in liberal democracies. Her research centers on contemporary deprivation of fundamental rights, with an emphasis on the uses of the rule of law under conditions of security.

Michael Bordo

Economic History · Rutgers, The State University of New Jersey · *v, s*

Michael Bordo plans to work on financial globalization and financial crises in the period 1870–1914. The project combines theory, empirical data, and historical narrative to try to answer the question: why did some emerging countries that had access to foreign capital learn from financial crises and develop the institutions to become advanced countries, while others did not?

Brady Brower

History · Weber State University

In the period of France's Third Republic, a wide-ranging discourse about animal societies offered a powerful means of redefining the ideological determinants of the social order in response to various challenges. Research on animal sociability served republican ideologues' efforts to revise liberal ideals in order to promote solidarity while maintaining the differentiation of social elements.

Manduhai Buyandelger

Anthropology · Massachusetts Institute of Technology

Manduhai Buyandelger is developing an anthropological account of women's participation in Mongolia's parliamentary elections since the collapse of socialism in the 1990s. This will be based on research on postsocialist gendered transformations, including two parliamentary elections in 2008 and 2012.

Kalyan Chatterjee

Economics · The Pennsylvania State University

Richard B. Fisher Member

Kalyan Chatterjee is studying networks and complexity in games. He aims to model different aspects of diffusion in networks, for example, of rumors. He also hopes to show that, because complexity bounds the ability of players to process information optimally, only extremely bad news causes a change in action, while small pieces of bad news can accumulate without reaction.

f First Term · *s* Second Term · *v* Visitor

Brian Connolly

History · University of South Florida · *v*

Brian Connolly is researching kinship, religion, and law in the nineteenth-century United States. Exploring six sites where kinship and religion intertwined in the context of the rise of international marriage law (representations of Hindu and Muslim kinship in India and North Africa, slave maroon communities, Mormonism, spiritualism, and ethnography), his study will offer genealogies of secularism, national sovereignty, and modernity.

Pinar Doğan

Economics · Harvard Kennedy School · *v*

Pinar Doğan's research interests include economics of networks, regulation, and competition policy with an emphasis on the telecommunications industry. Her recent research focuses on the impact of access policies on investment and social welfare.

James Doyle

Philosophy · Institute for Advanced Study · *v*

James Doyle is working on a book on Plato's *Gorgias*. This will give an analysis of the main arguments of the dialogue, and an account of the use to which Plato puts the dialogue form, as leveling an implicit critique of Socrates's conception of philosophical method and his associated doctrine of "intellectualism."

Sara Edenheim

History, Gender Studies · Umeå University · *v, s*

Sara Edenheim's research focuses on feminist philosophy of history. While at the Institute, she will study the concept of tolerance within the neoliberal framework of identity politics, with a special focus on governmental policies.

Adam Elga

Philosophy · Princeton University
Deutsche Bank Member

When a system consisting of many interacting parts (such as an electrical power grid or a banking network) starts failing, it is tempting to make the system more robust by linking its parts together. Adam Elga is studying how market forces, political incentives, and psychological tendencies all push in the direction of creating systems that are both fragile and seemingly robust, while the existence of stable risks is a good that is subject to a serious free rider problem.

f First Term · *s* Second Term · *v* Visitor

Anver M. Emon

Law · University of Toronto

Anver Emon researches Islamic legal history and theory, premodern modes of governance and adjudication, and the role of Shari'a both inside and outside the Muslim world. He is studying fundamental issues of law and legal authority in premodern Islamic law and how they map onto contemporary debates about Shari'a in the Muslim majority world and among Muslim minorities.

Gary Alan Fine

Sociology · Northwestern University

Gary Fine is a social psychologist and sociologist of culture who is interested in examining how small group cultures create political affiliation and civil society. He is also completing an ethnography of the socialization of M.F.A. visual artists, focusing on their presentation of disciplinary practices and their construction of artistic selves.

Paul Gowder

Law and Political Theory · The University of Iowa

Paul Gowder is examining how the rule of law (understood as a tool for ensuring social equality among the members of a legal community) is necessary for political equality and popular sovereignty in democratic states, and the implications of this idea for constitutional governance.

Alexander A. Guerrero

Philosophy · University of Pennsylvania

Alexander Guerrero works on topics in ethics, political philosophy, bioethics, and epistemology. At IAS, he will develop an argument against using elections to select political representatives, and in favor of using lotteries, developing and defending a "lottocratic" alternative to electoral representative democracy.

Hugh Gusterson

Anthropology · George Washington University

Polygraph evidence was excluded from court after 1923, and in 1988 private employers were forbidden to polygraph employees, but polygraph use has expanded in the national security state and on daytime television. Hugh Gusterson plans to analyze the world the polygraph has created and the "practical knowledge" of those who administer or take polygraph tests.

f First Term · *s* Second Term · *v* Visitor

Michael Hanchard
Political Science · Johns Hopkins University
Utilizing previously neglected primary materials and sources, Michael Hanchard is tracing the specter of race in the study of comparative politics from the writings and institutional developments of Edward Augustus Freeman and Herbert Baxter Adams, the "movement" of comparative politics in the 1950s, to Samuel Huntington's "Clash of Civilizations" thesis after the fall of the Soviet Union.

John Holmwood
Sociology · The University of Nottingham
John Holmwood is contributing to the interdisciplinary program on "Egalitarianisms." He plans to address the relation between conceptions of equality and inequality in sociology and those of wider publics, with the aim of redirecting sociological arguments towards a more direct engagement with popular understandings of inequality and its discontents.

Nannerl O. Keohane
Political Theory · Princeton University · *v*
Nannerl Keohane is currently researching the theory and practice of leadership in democratic societies. At the Institute, she plans to work on a book about democratic leadership, with particular attention to issues of inequality, institution-building, and working together for the common good.

Julilly Kohler-Hausmann
History · Cornell University
Julilly Kohler-Hausmann is chronicling legislative struggles during the 1970s in which lawmakers enacted punitive welfare, drug, and criminal policies that transformed notions of government responsibility to socially marginalized groups. She will explore how the embrace of retribution, surveillance, and political exclusion resuscitated state legitimacy and reshaped conceptions of citizenship.

Jill Locke
Political Science · Gustavus Adolphus College
Jill Locke is researching and writing about children's political activism, particularly the role of children in the U.S. civil rights movement. Her project engages Hannah Arendt's political theory, work in philosophy and law on "children's rights," and sociological, literary, and historical work on "the child" and children's protests.

f First Term · *s* Second Term · *v* Visitor

Jennifer A. London
Political Science · Institute for Advanced Study · *v*
Jennifer London is a political theorist working on Arabic models of the just world. She will complete a manuscript on the political thought of the Persian secretary Ibn al-Muqaffa'—a luminary of early Arabic prose. She will analyze how Ibn al-Muqaffa' introduced Persian political ideas at the 'Abbasid court to achieve greater authority.

Anandi Mani
Economics · University of Warwick
Deutsche Bank Member
Anandi Mani studies development economics, with a focus on the behavioral economics of poverty and social exclusion. At IAS, she plans to work on how poverty affects the allocation of cognitive resources across short- versus longer-term decisions, as well as the behavioral implications of gender stigma and crime.

Nolan McCarty
Political Science · Princeton University
Nolan McCarty is exploring the relationship between economic inequality and political polarization in the United States. His research will be based on new data on the polarization of state legislatures.

Maurizio Meloni
Sociology · The University of Nottingham
Maurizio Meloni is working on the historical, conceptual, and political implications of the life sciences, in particular neuroscience and epigenetics. He is currently developing the idea of a "political epistemology" to explain the coproduction of epistemic facts and sociopolitical values from eugenics to the present. At IAS, he plans to explore how social epigenetics may blur the boundaries between natural and social inequalities.

Peter Alexander Meyers
Intellectual History, Political Theory · Université Paris III
Peter Alexander Meyers is developing the Civic Inquirer, a project for civic problem-solving focused on disputes that are grounded in the pressures, risks, and opportunities of everyday life. The project seeks new modes of interaction between local knowledge and professional research and involves a working group at the IAS this year on "civic ethnography."

f First Term · *s* Second Term · *v* Visitor

Jennifer L. Morgan
History · New York University
AMIAS Member

Jennifer Morgan is working on a history of racial ideology, gender, and numeracy in the early modern Atlantic, in which she argues that the slave trade emerged from the ideologies of race and enumeration. Thus, the transatlantic slave trade is rooted in the logics of capitalism, and capitalism itself relies on the human fungibility embedded in the slave trade.

Sharun W. Mukand
Political Economy of Development · University of Warwick
Roger W. Ferguson, Jr., and Annette L. Nazareth Member

Sharun Mukand works on the political economy of policymaking and development. At the Institute, he plans to explore the role of ideas, leadership, and persuasion in catalyzing nation building and institutional change.

Serguei A. Oushakine
Anthropology · Princeton University
Frederick Burkhardt Fellowship funded by the American Council of Learned Societies

Serguei Oushakine is exploring forms of historical imagination that started taking shape in postcommunist Eurasia. Using archival and ethnographic materials, his multi-sited research is documenting the afterlives of the massive project of Soviet modernization that radically changed the social, ethnic, and cultural landscape of Eurasia during the last century.

Charles M. Payne
Social Change, Civil Rights · The University of Chicago
Friends of the Institute for Advanced Study Member

Charles Payne is synthesizing what we have learned in the last fifteen years or so about changing urban schools and school systems to give children better options in life. Looking closely at the data on systems that outperform others on meaningful metrics, he aims to develop a set of grounded hypotheses to guide both practice and further research.

Gideon A. Rosen
Philosophy · Princeton University · *v*

Gideon Rosen is working on the nature and limits of moral responsibility and, in particular, the implications of contemporary psychology for this part of ethics. He is also pursuing a second issue in metaphysics where the question is (roughly): what is it for one fact to be more fundamental than another?

f First Term · *s* Second Term · *v* Visitor

Sophia Rosenfeld

History · University of Virginia
Ed Kaufmann Founders' Circle Member

Sophia Rosenfeld is an intellectual and cultural historian with a special interest in the history of democracy since the eighteenth century. At IAS, she is researching how the maximization of choice gradually developed across the Atlantic world into a proxy for freedom in human rights struggles and consumer culture alike.

Noah Salomon

Religion · Carleton College · *v, f*

Noah Salomon is completing a book manuscript that examines Sudan's recent experiment with an Islamic state. Focusing his research on engagements between the state and other Islamic actors occurring in four domains—politics, epistemology, aesthetics, and subjectivity—he seeks to understand the Islamic state beyond its institutional boundaries, as it comes to life in everyday encounters.

Valentin Seidler

Development Economics · Universität Wien · *v*

Valentin Seidler's research focuses on the question of whether and how institutions can be transplanted into societies lacking them. At the Institute, he plans to explore the role of highly educated civil servants in the institutional reforms of former African colonies.

Cécile Stehrenberger

History of Cold War Social Science Disaster Research · Universität Zürich · *v*

Cécile Stehrenberger is exploring the history of social science disaster research during the Cold War. While at the Institute, she will examine publications and archival documents from several research groups and analyze their activities in the context of specific senses of dangers and forms of governmentality.

Joanna Tokarska-Bakir

Cultural and Historical Anthropology · University of Warsaw · *v*

Joanna Tokarska-Bakir specializes in the anthropology of blood libel and anti-Jewish violence. She is currently working on a project on postwar pogroms in Eastern Europe.

f First Term · *s* Second Term · *v* Visitor

Mara Viveros Vigoya
Anthropology · Universidad Nacional de Colombia
Wolfensohn Family Member

Focusing on the key intersections of race, gender, and class, Mara Viveros Vigoya's research examines the processes of social mobility among black populations in each of Colombia's geographic regions and explores the scope and limitations of Colombia's liberal multiculturalist model for eliminating Afro-Colombian social inequalities.

Richard Ashby Wilson
Anthropology and Law · University of Connecticut
Friends of the Institute for Advanced Study Member

Richard Wilson is assessing recent efforts to criminalize inciting speech. His project will draw upon qualitative research conducted at three international criminal tribunals, as well as psychological experiments on the effects of denigrating speech.

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 origins of life and the nature of complexity. The program is headed by Professor Piet Hut.

FACULTY

Piet Hut

Professor

One focus of Piet Hut's research is computational astrophysics, in particular multiscale multiphysics simulations of dense stellar systems. Another focus is interdisciplinary explorations in the areas of cognitive science and philosophy of science centered around questions involving the nature of knowledge. A third focus is the question of the origins of life, on Earth as well as elsewhere in the universe, for which he is a foreign Principle Investigator at ELSI, the Earth-Life Science Institute at the Tokyo Institute of Technology. The author of more than two hundred publications, Hut was honored in 2004 when a main-belt asteroid was named "17031 Piethut" by the International Astronomical Union's Committee on Small Body Nomenclature.

VISITORS

Henderson James Cleaves II

Chemistry · Carnegie Institution of Washington · *v*

Jim Cleaves is studying the origin of life on Earth and elsewhere, specifically with the question of how chemistry becomes biology. He is interested in how simple organic compounds are produced from cosmically abundant inorganic compounds under geochemically plausible conditions and how these compounds self-organize to form more complex and potentially self-replicating systems.

Douglas Duckworth

Philosophy · Temple University · *v*

Douglas Duckworth works on the relationship between ontology and epistemology in Buddhist philosophy. He is interested in the intersections of phenomenological and ontological approaches to meaning. His research involves inquiry into the nature of subjectivity and cognition and the ways each are constituted, enacted, and constructed.

v Visitor

Yuka Fujii

Planetary Science · Earth-Life Science Institute, Tokyo Institute of Technology · *v*

Yuka Fujii explores methods to gain insight into detailed properties of exoplanets by astronomical observations, primarily focusing on a variety of potentially habitable planets. She also studies coevolution of life and the planet to examine possible forms of life and their observable signatures.

Hyun Ok Park

East Asian Studies · York University · *v*

Hyun Ok Park is exploring the practice of comparison and the grounds for comparability in the humanities and social science. Her current book project approaches the history of stateless Koreans in Japan as part of a global and transnational history of the Cold War.

Edwin L. Turner

Astrophysics · Princeton University · *v*

Edwin Turner will be working on statistical biases and estimators for samples of exoplanets detected using various techniques; on the Strategic Exploration of Exoplanets and Disks with Subaru Telescope project; and on implications of complexity in cellular automata systems for the limits of reductionism, as well as related topics in the philosophy of science.

v Visitor

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.

Catherine Chung
Writer; Assistant Professor, Adelphi University
Catherine Chung is researching and writing a novel, which will explore math and physics, as well as history, race, gender, and war, and how seemingly distant, unrelated stories, lives, and ideas can turn out to be inextricably linked to each other.

Graham Farmelo
Writer; Adjunct Professor of Physics, Northeastern University
Bye-Fellow, Churchill College, University of Cambridge
Graham Farmelo is researching his next book, which will illustrate how modern mathematics is enriching the development of fundamental theoretical physics, and vice versa. Several of the physicists and mathematicians whose work will be featured in the account have worked or are now working at the Institute.

Alok Jha
Journalist
Alok Jha is a science journalist working in TV, radio, and newspapers. At IAS, he is exploring the cultural and scientific story of water, the strangest chemical in the universe. He plans to examine how humans have been shaped by water and how we have tried to understand it—via everything from religious myths to chemistry—ever since the dawn of our species.

Pauline Yu
President, American Council of Learned Societies
Pauline Yu is writing about the first translations of classical Chinese poetry into European languages in the nineteenth century. She is focusing on the literary renditions of the multi-talented writer Judith Gautier, which were inventive and enormously influential, as well as examining, as backdrop and contrast, the work of contemporary scholars of sinology.

Artist-in-Residence Program

The Artist-in-Residence Program was established in 1994 to create a musical presence within the Institute community and to have in residence a person whose work could be experienced and appreciated by scholars from all disciplines. Composer Sebastian Currier continues as Artist-in-Residence, curating the Edward T. Cone Concert series and hosting conversations with artists, while pursuing his creative and intellectual work as part of the Institute's community of scholars.

Sebastian Currier

Composer

Sebastian Currier is a composer of complex and imaginative works, which have been performed by such eminent artists and ensembles as Anne-Sophie Mutter, Berlin Philharmonic, Kronos Quartet, and New York Philharmonic. A recipient of the prestigious Grawemeyer Award, Currier has received numerous honors including the Berlin Prize, the Rome Prize, a Guggenheim fellowship, and an Academy Award from the American Academy of Arts and Letters, and he has held residencies at the MacDowell and Yaddo colonies. He received a D.M.A. from the Juilliard School, and from 1997–2007 he taught at Columbia University. In the 2014–15 season, Anne-Sophie Mutter will give the U.S. premiere of *Ringtone Variations* at Carnegie Hall, pianist Inon Barnatan will give the world premiere of *Glow* at Wigmore Hall in London, and the Seattle Symphony will premiere a new work for orchestra.

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