IAS
Institute for Advanced Study

Faculty and Members 2013–2014

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: Kazuya Yonekura (kneeling), Member in the School of Natural Sciences, with Yuji Tachikawa (Member, 2006–11) Photo: Andrea Kane

Contents

Information contained herein is current as of September 23, 2013.

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 offers all who work there 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 no more than twenty-eight, 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 thirty-eight out of fifty-two 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.
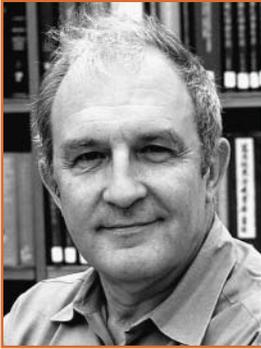
Yve-Alain Bois
Professor · Art History

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.
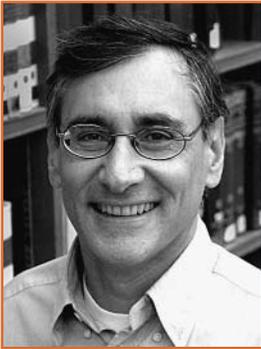
Angelos Chaniotis
Professor · Ancient History and Classics

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.

Patricia Crone
Andrew W. Mellon Professor · 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 and the cultural and religious traditions of Iraq, Iran, and the formerly Iranian part of Central Asia.

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

Professor · Modern European History

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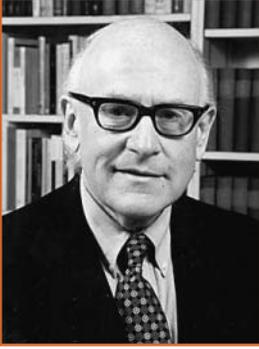
Glen W. Bowersock

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. She is currently working on a comparison of Western and non-Western pieties.
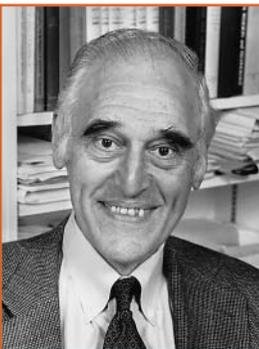
Giles Constable

*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, 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, and the history of Cluny. He recently completed a book on the fourteenth-century crusading propagandist William of Adam and continues to work on the California Gold Rush.

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
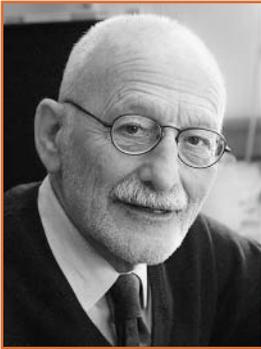
Irving Lavin is one of America's most distinguished art historians. He has written extensively on the history of art from late antiquity to modern times, including numerous studies on Italian painting, sculpture, and architecture of the Renaissance and Baroque periods. His interests have focused primarily 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
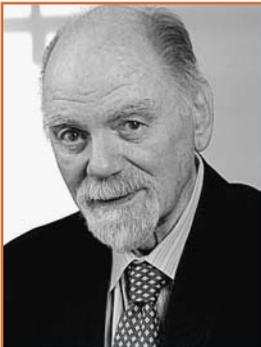
Peter Paret is a cultural and intellectual historian with particular interest in the interaction of war and society since the eighteenth century, how historians integrate war with their interpretation of other historical forces, and the relationship between tradition and modernism in the art of nineteenth 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.
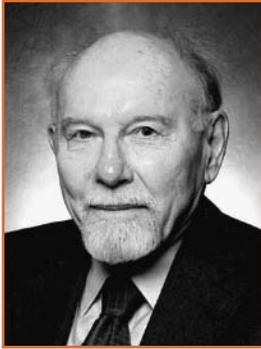
Morton White

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.

SCHOOL OF HISTORICAL STUDIES

Hassan Farhang Ansari
Intellectual and Legal Studies · Freie Universität Berlin
Funding provided by the Herodotus Fund

Hassan Ansari focuses on the study of philosophy, theology, Islamic law, and principles of jurisprudence.

Sean William Anthony
Islamic History, Late Antiquity · University of Oregon · *f*
The Andrew W. Mellon Foundation Fellowships for Assistant Professors

Sean Anthony's project aims to reorient the historiography of early Shi'ism by offering a new reading of its origins against the backdrop of late-antique apocalypticism and the triumphalist ideologies of the early Islamic polity.

Alison Beach
Medieval Religious Women · The Ohio State University
Funding provided by the Patrons' Endowment and the Edwin C. and Elizabeth A. Whitehead Fellowship Fund

Alison Beach's research focuses on the role of religious women in the Hirsau reform from the eleventh to twelfth centuries. While at the Institute, she will look beyond the narratives of the movement's monk-historians to write a history of the women of Hirsau that takes them seriously as both agents and subjects of reform.

Edyta Bojanowska
Russian Literature and History · Rutgers, The State University of New Jersey
Frederick Burkhardt Fellowship funded by the American Council of Learned Societies

Edyta Bojanowska works on the treatments of empire in Russian culture and intellectual history. Her current project traces this theme in the works of major Russian writers of the 1850s to the 1900s and in periodical press, linking the empirical, historical empire with its cultural and ideological incarnations.

Anna Boreczky
Medieval Manuscript Illumination, History of Illustration · National Széchényi Library, Budapest
The Gladys Krieble Delmas Foundation Member; additional funding provided by the Elizabeth and J. Richardson Dilworth Fellowship Fund

Anna Boreczky intends to reconstruct the illustration history of the late-antique adventure story known today as the *Historia Apollonii Regis Tyri*, one of the most popular secular readings throughout the Middle Ages, by compiling the corpus of Apollonius illustrations and their comparative analyses.

f First Term · *s* Second Term · *v* Visitor · *vp* Visiting Professor · *a* Research Assistant
j Joint Member School of Social Science

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Annie Bourneuf

European Art of the Early Twentieth Century · School of the Art
Institute of Chicago
Felix Gilbert Member; additional funding provided by the Herodotus Fund

Annie Bourneuf's project explores how artists and intellectuals working
in Expressionist and Dadaist circles in central Europe during the 1910s
pursued visions of visual art in general and of abstract art in particular
as a form of language and often as a prelapsarian "language of paradise."

David Prager Branner

Chinese Philology · Columbia University · *f*
Willis F. Doney Member

David Branner's project examines the development of prosody in the
Chinese middle period, relying on statistical tools to define different
styles quantitatively. His goal is to describe prosodically organized liter-
ature in its early stages so as to understand its place in the larger history
of Chinese language and literature.

Ursula Birgit Brosseder

Eurasian Archaeology · Rheinische Friedrich-Wilhelms-Universität
*Elizabeth and J. Richardson Dilworth Fellow; additional funding provided by the
Hetty Goldman Membership Fund*

Ursula Brosseder's work explores dynamics of interaction in the late
Iron Age Eurasian steppes during the emergence of the "silk roads" and
confronts theories of the Xiongnu as progenitors of the European Huns.
She seeks to supersede notions of merchant trade and mass migrations
by reframing contacts within sociopolitical and economic networks.

Rainer Brunner

Islamic Studies · Centre National de la Recherche Scientifique, Paris

Rainer Brunner is interested in Islamic intellectual history, especially
modernism and modern appropriations of classical concepts. He is also
exploring Shiite Islam, Sunnite-Shiite relations, the role of politics in
theological reasoning, and Islam in Europe and the various problems
related to Muslim presence in a secular environment.

Judith Ann-Marie Byfield

African History · Cornell University
Funding provided by the Fund for Historical Studies

Judith Byfield is studying a women's tax revolt in Abeokuta, Nigeria,
in 1947, marking a new stage of collective organizing among women
as they transformed a critique of local officials into a critique of colo-
nialism. Byfield's research explores women's anticolonial activism,
political agency, and intellectual contribution to nationalism.

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Giorgio Caravale

Early Modern European Intellectual History · Università degli Studi Roma Tre
Gerda Henkel Stiftung Member

The object of Giorgio Caravale's research is to investigate the impact of Church censorship on Italian culture during the early modern period (sixteenth to eighteenth centuries) and the effects of this effort of cultural and social disciplining on the structuring of Italian cultural identity.

Mark Cruse

Medieval French Literature · Arizona State University
AMIAS Member; additional funding provided by the Herodotus Fund

Mark Cruse's research focuses on the relationship between writing, material culture, and performances of various kinds in the medieval Francophone world. At the Institute, he will examine manuscripts of the Old French version of Marco Polo's travel account to elucidate what this seminal work meant to its earliest readers.

Anastasia Drandaki

Byzantine Art and Archaeology · Benaki Museum, Athens
Funding provided by the Herodotus Fund

Anastasia Drandaki is investigating Byzantine paintings of the thirteenth to fifteenth centuries to identify the pictorial means employed by patrons and artists to express religious tolerance toward the Latin population in an environment of deep division in the Orthodox community over the official ecclesiastical policy toward the Latin populace.

Yaacob Dweck

Early Modern Intellectual History · Princeton University
The Andrew W. Mellon Foundation Fellowships for Assistant Professors

Yaacob Dweck is reconstructing the worldview of Jacob Sasportas (1610–98), a rabbi from North Africa, who wandered throughout the Sephardic Diaspora in Western Europe for much of his life and emerged as the primary opponent of the mass messianic movement that coalesced around Sabbetai Sevi in the 1660s.

Patricia Ebrey

Chinese History · University of Washington · *f*
Funding provided by The Andrew W. Mellon Foundation

Patricia Ebrey is examining how states have repeatedly been able to reunite the marked geographical differences between north and south China, making China the largest country in the world for most of its history. She is focusing primarily on the crucial period from 550 to 1250.

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Bonnie Effros

History of Archaeology; Early Medieval History and Archaeology ·
University of Florida
George Kennan Member; additional funding provided by the Hetty Goldman Membership Fund

Bonnie Effros studies how the French army's destruction of ancient Roman monuments in Algeria following the 1830 invasion encouraged officers to document and preserve antiquities. Her project examines the contributions of Roman archaeological studies to French narratives of occupation and the building of settler identities in Algeria.

Stefan Esders

History of Late Antiquity and the Early Middle Ages · Freie
Universität Berlin · *f*
Funding provided by the Fund for Historical Studies

Stefan Esders aims to explore the possible interconnectedness of several crucial periods of approximately five to seven years between the sixth and early ninth centuries, during which important political decisions, military action, and other events in different regions and realms of the Mediterranean appear to have happened simultaneously.

Mehrdad Fallahzadeh

Historical Music Theory · Uppsala University
Edward T. Cone Member in Music Studies; additional funding provided by the Elizabeth and J. Richardson Dilworth Fellowship Fund

Mehrdad Fallahzadeh's research focuses on the history and evolution of Indian, Iranian, and Central Asian music theory during the post-scholastic era (1500–1850) of Persian writing on music theory. At the Institute, he will study the evolution of Indian music theory and the raga-ragini system of the seventeenth century.

Paul R. Goldin

Classical Chinese History and Philosophy · University of Pennsylvania · *f*
Willis F. Doney Member

Paul Goldin plans to work on a volume on classical Chinese thought that will focus on eight texts from the classical period—the Analects of Confucius, Mozi, Mencius, Laozi, Zhuangzi, Sunzi, Xunzi, and Han Feizi—that proved most influential in later periods and provided the philosophical statements around which contemporaries oriented their own positions.

Monica H. Green

History of Medicine · Arizona State University
Willis F. Doney Member; additional funding provided by the National Endowment for the Humanities

Monica Green's project surveys over five hundred Latin medical books from the late eleventh to early thirteenth centuries, many of which brought new texts and concepts into Europe from the Islamic world. For the first time, Europe shared a medical language and practices to which all Christians, Muslims, and Jews could lay claim.

f First Term · *s* Second Term · *v* Visitor · *vp* Visiting Professor · *a* Research Assistant
j Joint Member School of Social Science

SCHOOL OF HISTORICAL STUDIES

Christopher Hamlin

History of Science, Technology, and Medicine · University of Notre Dame
Hans Kohn Member

Christopher Hamlin plans to focus on the intersection of social medicine and political economy in Scotland and Ireland in the decades before and after 1800—the foundational period of European liberalism, particularly with regard to famine-generated epidemic disease.

Kaja Harter-Uibopuu

Ancient Greek Law, Greek Epigraphy · Österreichische Akademie der Wissenschaften · *s*
Funding provided by the Fund for Historical Studies

Kaja Harter-Uibopuu is focusing on ancient Greek inscriptions as a source for public administrative law and the law of procedure in Hellenistic and Roman times from the end of the fourth century B.C. to the beginning of the third century A.D. Under the title "Administration of Philanthropy," she is preparing a commentary on several charitable foundations.

Colin Heydt

Early Modern History of Philosophy · University of South Florida
Funding provided by the National Endowment for the Humanities

Colin Heydt is a historian of early modern ethics and political philosophy. He is writing a book that reconstructs the history of practical ethics in eighteenth-century Britain. The book's principal goal is to identify the conventional positions on both the content and point of philosophical morality.

Masoud Jafarijaze

Islamic History · Institute for Advanced Study · *a*

Masoud Jafarijaze is a Research Assistant to Professor Patricia Crone. His research interests include Persian literature, especially of the Samanid and Ghaznavid ages, and comparative studies in contemporary Persian literature.

Katherine L. Jansen

Medieval History · The Catholic University of America · *f*
George William Cottrell, Jr., Member

Katherine Jansen is currently researching dispute settlement in late medieval Florence. Through an examination of notarial peace instruments as a complement to the legal system, she argues that these legal remedies helped to forge the new popular government's identity as a *bene comune*, one based firmly on communal peace and security.

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Sara Kaczko

Greek Literature, Epigraphy, Linguistics · Università degli Studi di
Roma, La Sapienza · *s*
Willis F. Doney Member

Sara Kaczko is studying the interplay between image and literary-linguis-
tic features of dedicatory epigrams on stone in archaic and classical Athens
in the communication with their audience. Her research chiefly investi-
gates how the languages of art, epigraphy, and literature were purposefully
employed to make some more elaborate inscribed monuments stand out.

Sean Hsiang-lin Lei

History of Science and Medicine in Modern East Asia · Institute of
Modern History, Academia Sinica
*The Starr Foundation East Asian Studies Endowment Fund Member; additional
funding provided by the Herodotus Fund*

Sean Hsiang-lin Lei is seeking to understand how Chinese medicine
was transformed from an antithesis of modernity in the early twentieth
century into a potent symbol and vehicle for China's exploration of its
own modernity half a century later.

Michele Matteini

History of Chinese Art · Reed College
The Andrew W. Mellon Foundation Fellowships for Assistant Professors

Michele Matteini's research explores the relationship between antiquar-
ian studies and the practice of painting in late eighteenth-century
China. He is currently working on a cultural history of the Xuannan
district, a neighborhood of Beijing, between the 1770s and the 1820s.

Naphtali S. Meshel

Religion · Princeton University

Naphtali Meshel has developed a "ritual grammar" as an analytical tool
for the examination of Biblical and early Jewish sacrificial texts. At the
Institute, he plans to assess the explanatory power of this "grammar" by
examining its applicability to other ancient Near Eastern and South
Asian ritual systems.

Matthew W. Mosca

Chinese History · College of William & Mary
The Andrew W. Mellon Foundation Fellowships for Assistant Professors

Matthew Mosca is examining how, between 1700 and 1900, historians
of the Mongol empire effectively integrated research communities
across Eurasia into a collaborative field of study involving Chinese,
Inner Asian, and European scholars. This forged an incipient pan-
Eurasian circuit of information capable of confronting large-scale
phenomena that earlier techniques could not adequately address.

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Laura Nenzi

Early Modern Japanese History · University of Tennessee · *s*
Martin L. and Sarah F. Leibowitz Member

Laura Nenzi is a social historian of early modern Japan. Her current research on popular reactions to the political crisis of the late Tokugawa reassesses the traditional distinction between rational and irrational actors, between methodical and emotional participation, and between discourse and action.

David William Pankenier

Archaeoastronomy, Astrology, Cosmology, and History of Ancient China · Lehigh University
The Starr Foundation East Asian Studies Endowment Fund Member

David Pankenier will study the astronomical alignments of high-value Bronze Age structures, principally in Shaanxi. The aims of the project are to establish the patterns of alignment that are present, the cultural continuities they suggest, how they were achieved in practical terms, and the cosmological preconceptions they reflect.

Christopher Charles Parslow

Roman Archaeology · Wesleyan University · *f*
Funding provided by the Fund for Historical Studies

Christopher Parslow is documenting the architecture, art, and inscriptions from the Praedia (Properties) of Julia Felix in Pompeii—a unique semi-public building combining luxurious baths, shops, ornamental gardens, reception suites, and private apartments—and assessing their role in the social, economic, and political life of the city.

Sebastian Prignitz

Epigraphy, Classical Archaeology · Inscriptiones Graecae, Berlin-Brandenburgische Akademie der Wissenschaften · *s*
William D. Loughlin Member; additional funding provided by the Hetty Goldman Membership Fund

Sebastian Prignitz is interested in ancient Greek epigraphy and archae-ology. His aim is to combine these fields of scholarship, which are mostly separated in modern science. He plans to study the building program of the sanctuary of Asclepios at Epidauros, Greece, in the early fourth to mid-third centuries B.C.

Matthew B. Restall

Latin America/Caribbean · The Pennsylvania State University · *f*

Matthew Restall will explore the myths, meanings, and consequences of two misunderstood moments in history—the 1519 meeting of Cortés and Moctezuma in Mexico and the 1798 Spanish-British battle of St. George's Caye in Belize.

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David Robinson
Chinese History · Colgate University
The Starr Foundation East Asian Studies Endowment Fund Member

David Robinson is examining how successor states in Eurasia dealt with the legacy of the Mongol empire, particularly the Ming court of China in 1368 to 1644. He plans to explore how the Ming court both vilified the fallen Mongol rulers and exploited the prestige of the mighty Mongol empire and its institutions.

Roberto Romani
Modern Intellectual History · Università degli Studi di Teramo · *s*
The Gladys Krieble Delmas Foundation Member

Roberto Romani's field of expertise is the intellectual history of Europe from 1750 to 1914. He is currently working on the impact of religion and republicanism on the political thought of the Italian Risorgimento, aiming, in particular, to capture the elitist nature of its liberal strand.

Kim Lane Scheppele
Law · Princeton University · *j*

Kim Scheppele's research tracks the debate over the Holy Crown of St. Stephen—the twentieth-century interwar irredentist symbol fore-ground in Hungary's new nationalist constitution of 2012. She traces the debate back to its medieval sources and reworks its origin story by exploring the twin ideas of abjection and awe in the construction of constitutional community.

Sabine Schmidtke
Islamic Studies · Freie Universität Berlin

Sabine Schmidtke, who aims to contribute to the history of shared ideas, is working on an analysis of the theological doctrines of Abu l-Husayn al-Basri, the founder of what was apparently the last innovative school of Mu'tazilism, and a study of their reception among Muslims, Jews, and Christians.

Stephen J. Shoemaker
Religion in Late Antiquity · University of Oregon · *f*
Funding provided by the Herodotus Fund

Stephen Shoemaker is studying the veneration of the Virgin Mary in early Christianity by focusing on a number of frequently overlooked sources, including apocrypha and early liturgical texts especially. These texts reveal evidence of belief in Mary's intercession and her cultic veneration already in the third and fourth centuries.

SCHOOL OF HISTORICAL STUDIES

f First Term · *s* Second Term · *v* Visitor · *vp* Visiting Professor · *a* Research Assistant
j Joint Member School of Social Science
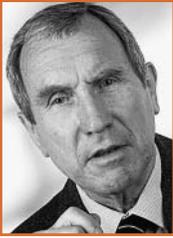
Gerhard Thür

Ancient Greek Law · Österreichische Akademie der Wissenschaften · *v, s*

Gerhard Thür is working on a book that draws a line—from Homer to Gortyn and archaic and classical Athens—from "irrational" to (more) "rational" methods in making judicial decisions.

Deborah Tor

Medieval Islamic History · University of Notre Dame
Funding provided by The Andrew W. Mellon Foundation

Deborah Tor will be writing a thematic history of the Great Seljuq dynasty (1040–1194), which inaugurated a thousand years of Turco-Mongol domination of the Middle East, and its formative role in the shaping of many of the religious, political, and social institutions of classical Islamic society.

Stephen V. Tracy

Greek History and Epigraphy · The American School of Classical Studies at Athens · *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."

Jing Tsu

History of Science and Technology in Modern China; Comparative Methods · Yale University · *s*
Funding provided by the Patrons' Endowment Fund

Jing Tsu plans to examine how the advent of modern Western scientific thinking was interpreted by Chinese intellectuals, amateur scientists, and industrialists in a rising cultural market for empirical novelties and falsifiable knowledge.

Nikolay Vladimirovich Tsyrempilov

Buddhism and International Relations in Modern Inner Asia · Russian Academy of Sciences
George Kennan Member

Nikolay Tsyrempilov is studying the role of Tibetan Buddhism in the modern history of Inner Asia, particularly how Buriat-Mongolian lamas lobbied in the upper circles of Russia and attempted to transmit European conceptions of state and politics to Mongolia and Tibet.

f First Term · *s* Second Term · *v* Visitor · *vp* Visiting Professor · *a* Research Assistant
j Joint Member School of Social Science

18

Henk van Nierop

The Dutch Golden Age · University of Amsterdam · *s*

Henk van Nierop is working on a biography of Romeyn de Hooghe (1645–1708), the most prolific graphic artist of the later Dutch Golden Age, who became deeply involved with various radical movements of his time and whose story highlights the vulnerability of aesthetic quality in the face of political strife and contesting networks of patronage.
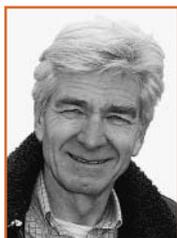
Michael van Walt van Praag

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.

Sitta von Reden

Ancient History · Albert-Ludwigs-Universität Freiburg
Friends of the Institute for Advanced Study Member

Sitta von Reden, who has published widely on money, exchange, and credit both in classical Athens and Hellenistic Egypt, will be investigating conflicts over water and water management in Hellenistic Egypt.

Emmanuel Voutiras

Classics, Greek and Roman Archaeology, Greek Epigraphy · Aristotle University of Thessaloniki · *s*
Elizabeth and J. Richardson Dilworth Fellow; additional funding provided by The Andrew W. Mellon Foundation

Emmanuel Voutiras is studying a new inscription from Dikaia, a colony of Eretria. A projected monograph will discuss and evaluate new evidence concerning the Eretrian presence in the northern Aegean, the reconcil-iation process, local cults, and calendar.

Barbara Walker

Modern History · University of Nevada, Reno · *f*
Funding provided by the Fund for Historical Studies

A Russianist, Barbara Walker studies the economic foundations of cul-tural, intellectual, and professional life. She is exploring the rise of a transnational class of experts in the Cold War United States and Soviet Union as they leveraged the national security anxieties of their respec-tive countries to expand their numbers and influence.

SCHOOL OF HISTORICAL STUDIES

Xi Wang

Chinese History; Mongolian and Manchu Studies · Renmin University of China · *a*

Xi Wang, Research Assistant to Professor Di Cosmo, 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 the twelfth to thirteenth centuries.

Stephen H. West

Chinese History and Literature of the Tenth to Sixteenth Centuries · Arizona State University
Funding provided by The Andrew W. Mellon Foundation and the National Endowment for the Humanities

Stephen West is researching the transitional period from the last days of the Jin dynasty to the reign of Kubilai Khan in the Yuan dynasty and investigating how conquest functioned as a catalyst for human re-engagement with the material, cultural, and social world through the act of writing.

Jocelyn Wogan-Browne

Medieval Literature · Fordham University · *s*
Agnes Gund and Daniel Shapiro Member; additional funding provided by the Herodotus Fund

Jocelyn Wogan-Browne, whose work has involved the reconceptualization of English medieval literary culture as multilingual, with particular attention to postnationalizing accounts of literary history enabled by inclusion of the Frenches of England, is studying late medieval women's multilingualism and their literary and documentary texts.

Yücel Yanikdağ

Ottoman and Turkish History · University of Richmond
George Kennan Member

Yücel Yanikdağ's research examines the cultural responses of Ottoman soldiers to the experience of the First World War. He is interested in how these men interpreted the conflict, what motivated them to endure the carnage, and in the end, how they dealt with the effects of this industrialized war.

f First Term · *s* Second Term · *v* Visitor · *vp* Visiting Professor · *a* Research Assistant
j Joint Member School of Social Science

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.

Non-equilibrium dynamics and random matrices will be the topic of the special program during the 2013–14 academic year. Horng–Tzer Yau of Harvard will be the School's Distinguished Visiting Professor and together with Tom Spencer will lead the program. Jürg Fröhlich, Joel Lebowitz, and Herbert Spohn will be among the senior participants attending.

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."
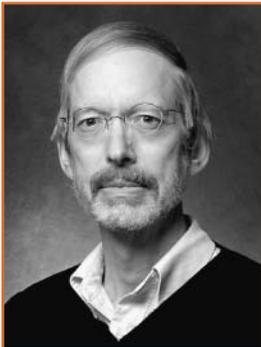
Robert MacPherson
Hermann Weyl Professor

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.
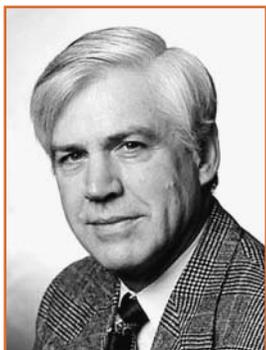
Thomas Spencer
Professor

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.
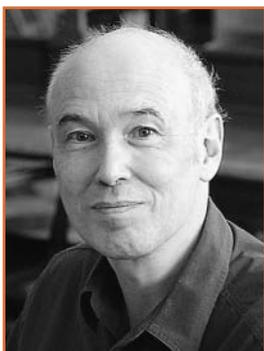
Pierre Deligne
Professor Emeritus

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.
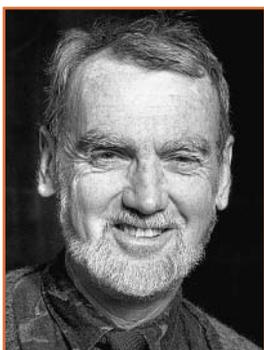
Robert P. Langlands
Professor Emeritus

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.

Noga Alon

Combinatorics · Tel Aviv University · *vp, f*
Neil Chriss and Natasha Herron Chriss Founders' Circle Visiting Professor;
additional funding provided by the Charles Simonyi Endowment and the National
Science Foundation

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 expects to combine combinatorial tools with algebraic and probabilistic techniques.

Andris Ambainis

Computer Science · University of Latvia · *vnf, s*
Funding provided by the National Science Foundation

Andris Ambainis's research involves the theory of quantum computing, particularly quantum algorithms, quantum complexity theory, quantum cryptography, randomness, and pseudorandomness in the quantum context. At the Institute, he will explore various topics in both classical and quantum computational complexity and theoretical computer science.

Stefanos Aretakis

Partial Differential Equations, Mathematical Physics · Institute for Advanced Study and Princeton University · *vri*
Funding provided by the National Science Foundation

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. He plans to study the black hole stability and uniqueness problem.

Roland Bauerschmidt

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

Roland Bauerschmidt is interested in statistical mechanics from a probabilistic and analytic perspective, in particular methods of multiscale and renormalization group analysis.

Costante Bellettini

Mathematics and Geometric Analysis · Institute for Advanced Study and Princeton University · *vri*

Costante Bellettini's research focuses on regularity questions in geometric measure theory, particularly calibrated currents and the role that they play in several geometric problems, such as invariants of manifolds and gauge theory.

f First Term · *s* Second Term · *m* Long-term Member · *v* Visitor · *vp* Visiting Professor
dvp Distinguished Visiting Professor · *vri* Veblen Research Instructorship · *vnf* von Neumann Fellowship

Vladimir Berkovich

Non–Archimedean Analytic Geometry · Weizmann Institute of Science
Friends of the Institute for Advanced Study Member; additional funding provided by the Oswald Veblen Fund

Vladimir Berkovich works in non–Archimedean analytic geometry and its applications to algebraic geometry and number theory. He plans to investigate a new approach to complex analytic vanishing cycles through formal geometry, with the aim of a possible extension of the Hodge theory to non–Archimedean analytic spaces.

Raphaël Beuzart-Plessis

Mathematics · Institute for Advanced Study
Funding provided by the Florence Gould Foundation Fund

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.

Bhargav Bhatt

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

Bhargav Bhatt is interested in arithmetic geometry, especially in the p-adic context. At the Institute, he will study the interactions between arithmetic geometry, commutative algebra, and the newly emerging subject of derived algebraic geometry.

Paul Bourgade

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

Paul Bourgade is interested in probability theory, especially the study of random matrices. He plans to work on so-called universality questions that arise from the complex statistical physics phenomena of random matrices, conjectured by Eugene Wigner and Freeman Dyson, which are surprisingly connected to problems in statistics and analytic number theory.

Chris Brav

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

Chris Brav is working on explicit descriptions of monodromy groups and period maps of certain families of Calabi-Yau varieties generalizing the Dwork family as well as on other general questions about the structure of moduli spaces and their quantizations in derived algebraic geometry.

SCHOOL OF MATHEMATICS

f First Term · *s* Second Term · *m* Long-term Member · *v* Visitor · *vp* Visiting Professor
dvp Distinguished Visiting Professor · *vri* Veblen Research Instructorship · *vnf* von Neumann Fellowship

Anna Gwenaelle Cadoret

Arithmetic Geometry · Institute for Advanced Study · *vnf*
Funding provided by the Fernholz Foundation and the National Science Foundation

Anna Cadoret's research is at the crossroads between arithmetic geometry, group theory, and number theory. Currently, she is studying representations of étale fundamental groups of schemes. In particular, she is interested in how they can be used to control the variation in families of arithmetico-geometric invariants encoded in étale cohomology groups.

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.

Daniel Cristofaro-Gardiner

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

Daniel Cristofaro-Gardiner is interested in low-dimensional and symplectic geometry and topology. While at the Institute, he plans to study applications of a three manifold invariant called the "embedded contact homology" to questions about symplectic embeddings and Reeb dynamics.

Anindya De

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

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

Andrew Drucker

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

Andrew Drucker studies the complexity of computational tasks. He is also interested in understanding the power of various computational resources, such as randomness and interaction with provers.

f First Term · *s* Second Term · *m* Long-term Member · *v* Visitor · *vp* Visiting Professor
dvp Distinguished Visiting Professor · *vri* Veblen Research Instructorship · *vnf* von Neumann Fellowship

László Erdös
Quantum Dynamics, Mathematical Physics · Ludwig-Maximilians-Universität München
AMIAS Member; additional funding provided by the Oswald Veblen Fund

László Erdös is interested in mathematical physics and probability theory, especially disordered quantum systems. Such systems in the delocalized regime are believed to obey the universal local statistics described by random matrices, a conjecture that has recently been proved for Wigner matrices. While at the Institute, his goal is to focus on systems with spatial dependence.

Yuval Filmus
Computer Science · Institute for Advanced Study · *s*
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 · Massachusetts Institute of Technology
Funding provided by the Ellentuck Fund

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.
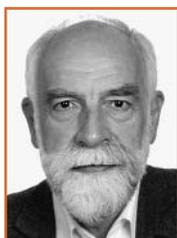
Jürg Fröhlich
Theoretical and Mathematical Physics · Eidgenössische Technische Hochschule Zürich · *vp*
Funding provided by the Fernholz Foundation

Jürg Fröhlich's field of specialization is theoretical and mathematical physics. During his stay at the Institute, he plans to focus on problems in quantum theory, statistical mechanics, and transport theory. His interests overlap with those of Thomas Spencer.

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

Edinah Gnang's research involves algebraic combinatorics, arithmetic circuit complexity, and all branches of theoretical computer science. Gnang's current research focuses on algebraic approaches to hypergraph expanders and the combinatorial Nullstellensatz method.

SCHOOL OF MATHEMATICS

f First Term · *s* Second Term · *m* Long-term Member · *v* Visitor · *vp* Visiting Professor
dvp Distinguished Visiting Professor · *vri* Veblen Research Instructorship · *vnf* von Neumann Fellowship

Mark Goresky
Geometry, Automorphic Forms · Institute for Advanced Study · *m*
Funding provided by the Oswald Veblen Fund

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

Daniel R. Grayson
Mathematics · University of Illinois at Urbana-Champaign
Funding provided by the Oswald Veblen Fund

Daniel Grayson's research focuses on algebraic K-theory and its connection with motivic cohomology. He has also helped write mathematical software, including Mathematica and Macaulay2. At the Institute, he will help develop homotopy type theory and related software into a useful tool for verifying the proofs of modern mathematics.

Philipp Habegger
Number Theory · Goethe-Universität Frankfurt am Main · *vnf, f*
Funding provided by the National Science Foundation

Height functions are useful for "bookkeeping" when solving diophantine equations but also have interesting intrinsic properties. They played an important role in resolving the Mordell conjecture and its generalizations. Philipp Habegger's research includes applications to conjectures on unlikely intersections and the distribution of height values.

Martin Hairer
Probability, Analysis · University of Warwick · *s*

Martin Hairer is currently working on the theory of renormalization for very singular stochastic partial differential equations. His ultimate goal is to use the objects built by this theory to describe space-time fluctuation fields for a variety of systems from statistical mechanics near criticality.

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

Doris Hein is working in symplectic geometry and its applications in Hamiltonian dynamics. She plans to study the existence of infinitely many periodic orbits of Hamiltonian systems and to apply similar tools to periodic orbits of Reeb flow on contact manifolds.

f First Term · *s* Second Term · *m* Long-term Member · *v* Visitor · *vp* Visiting Professor
dvp Distinguished Visiting Professor · *vri* Veblen Research Instructorship · *vnf* von Neumann Fellowship

Olga Holtz

Analysis · University of California, Berkeley · *vnf, s*
Funding provided by the National Science Foundation

Olga Holtz is interested in numerical analysis, matrix and operator theory, approximation theory, algebra and algebraic combinatorics, analysis of algorithms, and computational complexity. She plans to work on the theory of hyperbolic and stable polynomials, as well as entire functions, with applications to combinatorics, matrix theory, statistical mechanics, and theoretical computer science.

Hao Huang

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

Hao Huang's research interests mainly focus on problems from extremal graph and hypergraph theory, random structures, and applications of algebraic and probabilistic tools in combinatorics. Huang is also interested in problems on the interface of discrete mathematics and theoretical computer science.

John Imbrie

Mathematical Physics · University of Virginia
Funding provided by the Ellentuck Fund

John Imbrie is working on mathematical problems in quantum and statistical physics. He is currently studying the properties of random matrices that arise in many-body quantum systems.

Bruce Kapron

Computer Science · University of Victoria · *s*

Bruce Kapron's research interests include logic, verification, foundations of security, and computational complexity. Using logical methods and cryptographic tools, he plans to work on the development of computationally sound formal systems for reasoning about cryptography-based security.

E. Birgit Kaufmann

Mathematical Physics · Purdue University · *f*

Birgit Kaufmann works in mathematical physics. In particular, she is interested in integrable systems, nonequilibrium dynamics, and non-commutative geometry. At the Institute, she plans to mainly focus on the links between Bethe Ansatz and random matrix theory while continuing her work on quantum wire networks and constant mean curvature surfaces.

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dvp Distinguished Visiting Professor · *vri* Veblen Research Instructorship · *vnf* von Neumann Fellowship

Ralph Martin Kaufmann
Algebra, Geometry, Topology · Purdue University · *f*

Ralph Kaufmann works in geometry and topology using algebraic and geometric methods. He intends to study genera using vertex operator algebras, manifolds using topological field theory, algebraic structures using Feynman categories, and periodic materials using C⋆-algebras. He also intends to apply infinity and symplectic techniques to fundamental geometric questions.

Valerie King
Computer Science · University of Victoria · *s*

During her stay at the Institute, Valerie King will work on randomized algorithms, data structures, and fault tolerant distributed computing.

Antti Knowles
Probability · New York University · *f*

Antti Knowles is interested in the eigenvalue and eigenvector distributions of various random matrix models, including Wigner matrices, covariance matrices, band matrices, and adjacency matrices of random graphs.

Gillat Kol
Theory of Computation · Institute for Advanced Study

Gillat Kol is interested in complexity theory, with a focus on interactive proofs, probabilistically checkable proofs, and hardness of approximation.

Alex Kontorovich
Number Theory, Automorphic Forms · Yale University
Funding provided by the Charles Simonyi Endowment

Alex Kontorovich's research concerns problems at the intersection of number theory, geometry, dynamics, and representation theory. Specifically, he studies harmonic analysis on symmetric spaces to try to answer simple questions about whole numbers.

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

Arno Kret is using the Arthur-Selberg trace formula to study the reduction modulo p of Shimura varieties.

Antti Kupiainen
Mathematical Physics · University of Helsinki · *f*
Funding provided by the James D. Wolfensohn Fund

Antti Kupiainen is interested in nonequilibrium statistical mechanics, especially proving diffusion in stochastic and deterministic dynamics. He also plans to study two-dimensional random geometry arising from the exponential of the Gaussian free field.
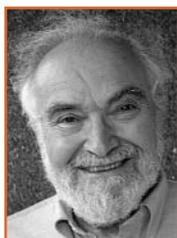
Joel Lebowitz
Statistical Mechanics, Mathematical Physics · Rutgers, The State University of New Jersey

Joel Lebowitz is interested in the emergence of macroscopic behavior from the underlying microscopic dynamics of the constituents of macroscopic matter.

Zhen Lei
Applied Mathematics · Fudan University · *s*
Funding provided by the S. S. Chern Foundation for Mathematics Research Fund and the Charles Simonyi Endowment

Zhen Lei is interested in the analysis of partial differential equations arising from fluid mechanics and nonlinear wave equations.

Brandon Levin
Number Theory · The University of Chicago
Funding provided by the National Science Foundation

Brandon Levin is interested in Galois representations, algebraic groups, p-adic Hodge theory, and Shimura varieties. He studies local Galois deformations at l=p with a view toward modularity lifting. He is also working on applying methods from geometric representation theory to number theory, particularly in the context of local models of Shimura varieties.

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dvp Distinguished Visiting Professor · *vri* Veblen Research Instructorship · *vnf* von Neumann Fellowship

Allison Lewko

Theoretical Computer Science, Mathematics · Columbia University · *v*

Allison Lewko's research interests include cryptography, complexity theory, distributed computing, harmonic analysis, and combinatorics. During her visit to the Institute, she will be working on algorithms and lower bounds for error-resilient computation and communication, as well various topics in cryptography and security.

Mark Lewko

Harmonic Analysis · Institute for Advanced Study

Mark Lewko is primarily interested in harmonic analysis and its applications.

Xue-Mei Li

Mathematics · University of Warwick · *v, s*

Xue-Mei Li has worked on the geometry of diffusion processes, Malliavin calculus, and the interplay between stochastic processes on manifolds and the underlying geometric spaces. Currently, she is focusing on mean field stochastic differential equations (SDEs), multiscale analysis on manifolds, and SDEs with singular coefficients.

Peter LeFanu Lumsdaine

Categorical Logic, Formalization of Mathematics · Institute for Advanced Study
Funding provided by the National Science Foundation

Peter Lumsdaine is continuing his work with Voevodsky's univalent foundations group, on the formalization and proof theory of homotopy type theory. Other interests include higher category theory, traditional constructive logic, and categorical approaches to quantum computing.

Or Meir

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

Or Meir is interested in all areas of theoretical computer science, particularly in complexity theory, probabilistically checkable proofs, coding theory, and derandomization.

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dvp Distinguished Visiting Professor · *vri* Veblen Research Instructorship · *vnf* von Neumann Fellowship

Jo Nelson

Symplectic and Contact Topology · Institute for Advanced Study · *v*

Jo Nelson's area of research is in symplectic and contact topology. She is interested in the relationships between symplectic and contact homology theories. While at the Institute, she plans to work to provide precise foundations and concrete examples of computations.

Alon Nishry

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

Alon Nishry's research involves complex analysis, probability, and number theory. He is particularly interested in random matrices, random analytic functions, and other types of smooth random fields.

Yoshiki Oshima

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

Yoshiki Oshima is interested in the representation theory of Lie groups, particularly branching laws of representations. The branching law describes how a given representation decomposes when restricted to a subgroup, which is a mathematical formulation of the breaking symmetry.

Ori Parzanchevski

Algebra, Combinatorics · Institute for Advanced Study

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.

Oana Pocovnicu

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

Oana Pocovnicu's research concerns problems in the analysis of non-linear dispersive partial differential equations, particularly understanding the long-time behavior of their global solutions. She has been working on global solutions whose high Sobolev norms grow with time and on scattering for energy-critical Schrödinger equations.

f First Term · *s* Second Term · *m* Long-term Member · *v* Visitor · *vp* Visiting Professor
dvp Distinguished Visiting Professor · *vri* Veblen Research Instructorship · *vnf* von Neumann Fellowship

Jeremy Quastel

Probability · University of Toronto

Jeremy Quastel has been working on the Kardar–Parisi–Zhang equation of random interface growth, where a number of exact solutions have been found that he is interested in extending and explaining.

Maksym Radziwill

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

Maksym Radziwill is interested in the analytic theory of L–functions, particularly the Riemann zeta-function. At the Institute, he plans to work on issues related to moments of L-functions.

Ran Raz

Computational Complexity · Weizmann Institute of Science · *vp*
Funding provided by the Charles Simonyi Endowment

Ran Raz's main research area is complexity theory with emphasis on proving lower bounds for computational models. More specifically, Raz 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 Giorgio and Elena Petronio Fellowship Fund and 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 (BLK) singularity scenario and the critical gravitational collapse phenomena that was discovered by Choptuik in numerical experiments.

Colleen Robles

Geometry · Institute for Advanced Study
Funding provided by the Fernholz Foundation

Colleen Robles is investigating the geometry and representation theory associated to the Lie groups that admit realizations as Mumford-Tate groups, the symmetry groups of Hodge theory.

Jeffrey Schenker

Mathematical Physics · Michigan State University

Jeffrey Schenker's current research program focuses on a rigorous analysis of wave propagation in disordered media and a related analysis of random operators and matrices. In a broader context, this research seeks to answer a fundamental query regarding any model of physics, "What are the effects of disorder?"

Benjamin Schlein

Mathematical Physics · Rheinische Friedrich-Wilhelms-Universität Bonn · *s*

Benjamin Schlein works on analytic questions arising in mathematical physics. He is particularly interested in the derivation of effective evolution equations from many body quantum dynamics. Another important area of his research, on which he plans to focus at the Institute, is the study of the spectral properties of random matrices.

Kevin Schnelli

Probability Theory, Mathematical Physics · Institute for Advanced Study

Kevin Schnelli's research concerns random matrix theory and transport theory. Currently, he is investigating spectral statistics of deformed random matrix models with a focus on edge universality and localization properties of eigenvectors.

Mira Shamis

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

Mira Shamis is currently interested in the spectral theory of Jacobi operators, particularly operators with periodic and almost periodic potentials.

Peng Shao

Harmonic Analysis · Institute for Advanced Study
Funding provided by the Ky Fan and Yu-Fen Fan Membership Fund and the National Science Foundation

Peng Shao is exploring the interaction between the asymptotic spectral properties of eigenfunctions on Riemannian manifolds and the propagation of singularities of the wave equation.

Nick Sheridan

Symplectic Geometry · Institute for Advanced Study and Princeton University · *vri*

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.

Ali Kemal Sinop

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

Ali Sinop's research interests are in approximation algorithms, hardness of approximation, and linear algebra. Currently, he is working on the use of hierarchies of convex relaxations for graph partitioning problems.

Michael Spiess

Arithmetic Algebraic Geometry · Universität Bielefeld

Michael Spiess's current research focuses on p-adic L-functions associated to automorphic forms. He is especially interested in phenomenon trivial zeros.

Herbert Spohn

Statistical Mechanics · Technische Universität München

Herbert Spohn's recent efforts are concentrated on stochastic integrable systems, such as models from the KPZ universality class, which include directed polymers in a random medium, statistical properties of driven interfaces, and nonlinear fluctuating hydrodynamics of one-dimensional systems.

Florian Sprung

Number Theory · Institute for Advanced Study and Princeton University · *vri*
Funding provided by the National Science Foundation

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.

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Christine Taylor

Evolutionary Game Theory, Evolution of Cooperation · Institute for Advanced Study and Princeton University · *v*

Christine Taylor is studying the act of cooperation, which is abundant in nature ranging from microbial colonies to animal and human societies. She is investigating different mechanisms for the evolution of cooperation, a conundrum and a central pillar of evolutionary biology, under deterministic and stochastic game dynamics.

Simone Warzel

Mathematical Physics · Technische Universität München · *vnf, f*
Funding provided by the National Science Foundation

Simone Warzel's current research addresses effects of disorder on the spectral and dynamical properties of random operators and matrices. At the Institute, she plans to further investigate the formation of extended states through resonances as well as aspects of localization in many-particle models.

Charles Weibel

K-theory, Motivic Cohomology · Rutgers, The State University of New Jersey

Charles Weibel works on motivic aspects of algebraic geometry, including motivic homotopy and algebraic K-theory. While at the Institute, he expects to study several conjectures due to Voevodsky, and plans to write a book containing the proof of the Bloch-Kato conjecture.

Horng-Tzer Yau

Probability Theory, Mathematical Physics · Harvard University · *dvp*
Funding provided by The Ambrose Monell Foundation and the Charles Simonyi Endowment

Horng-Tzer Yau is studying the connection between the universality of random matrices and the quantum unique ergodicity in the setting of random matrices, as well as related questions in other matrix models; the connection between the KPZ equation random matrices; and applications of random matrix theory in biology, statistics, engineering, and finance.

Jun Yin

Probability, Analysis, Mathematical Physics · University of Wisconsin–Madison · *vnf*
Funding provided by the National Science Foundation

Jun Yin is interested in random matrix theory and the quantum many-body system. During his visit at the Institute, he will be working primarily on the Wigner band matrix and the Anderson model.

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SCHOOL OF MATHEMATICS

Jun Yu
Computer Science · Institute for Advanced Study
Funding provided by the National Science Foundation and the Charles Simonyi Endowment

Jun Yu is interested in the branching problem for representations; cur-rently, he is working on applying the ideas of stability and moment mapping to the study of this problem. He is also interested in some questions about algebraic vector bundles and diophantine approximations.

Inna Zakharevich
Algebraic Topology · Institute for Advanced Study
Funding provided by The Bell Companies Fellowship Fund

Inna Zakharevich's research in algebraic topology is mostly focused on algebraic K-theory. Currently, her main project is to develop a theory of scissors congruence that allows her to construct spaces (not groups) expressing scissors congruence.

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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, which was 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 molecular biology and the physical sciences, most commonly utilizing genetic and molecular approaches, 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.
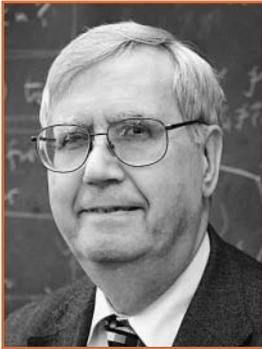
Peter Goddard

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 inconsistency, 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.

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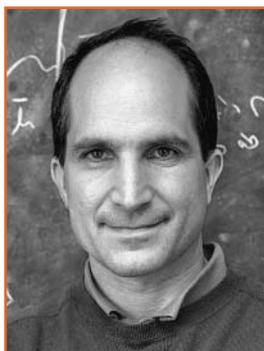
Juan Maldacena
Professor · Theoretical Physics

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.
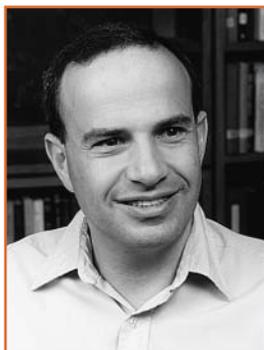
Nathan Seiberg
Professor · Mathematical Physics

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 phenomeno-logical 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 under-standing 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 interpret-ed 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.
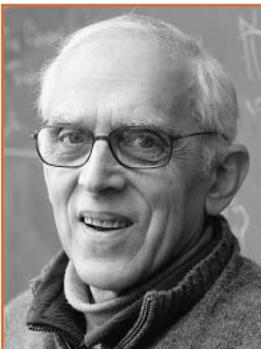
Stephen L. Adler
Professor Emeritus · Particle Physics

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 also developed new algorithms for multi-dimensional numerical integration.

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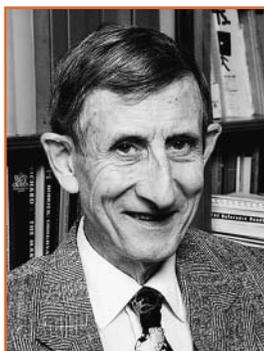
Freeman J. Dyson

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.

Yacine Ali-Haïmoud

Theoretical Astrophysics, Cosmology · Institute for Advanced Study
Frank and Peggy Taplin Member

Yacine Ali-Haïmoud has worked on the physics of dust grains in the interstellar medium and the primordial recombination of hydrogen. At the Institute, he plans on exploring new areas of theoretical astrophysics and cosmology such as gravity theories and the reionization epoch.

Tobias Baldauf

Cosmology · Institute for Advanced Study
Funding provided by the W. M. Keck Foundation Fund

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
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.

Ravindra Bhatt

Condensed Matter Physics · Princeton University

Ravindra Bhatt's research is in theoretical condensed matter physics, especially disordered and correlated systems. Most recently, he has been working on Anderson localization, fractional quantum Hall effect, high spin clusters in doped semiconductors, and Zener tunneling in non-parabolic bands.

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Simeon Paul Bird

Cosmology · Institute for Advanced Study
Funding provided by the W. M. Keck Foundation Fund and the National Science Foundation

Simeon Bird works on simulations of the Lyman–alpha and of the matter power spectrum, focusing on the impact of cosmological parameters. He is also interested in inflation.

Kfir Blum

Particle and Astroparticle Physics · Institute for Advanced Study
Funding provided by the United States–Israel Binational Science Foundation and the United States 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
Space Telescope Science Institute Hubble Fellow

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
Corning Glass Works Foundation 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.

Simon Caron-Huot

Mathematical Physics, Statistical Mechanics, String Theory, Supersymmetry · Institute for Advanced Study · *m*
Funding provided by the National Science Foundation

Simon Caron-Huot studies very hot and dense systems, such as the quark–gluon plasma. He is also interested in gravitational, especially black hole, physics.

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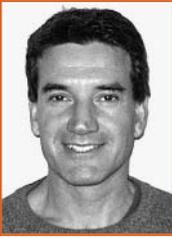
Horacio Casini

Quantum Field Theory · Instituto Balseiro and Consejo Nacional de Investigaciones Científicas y Técnicas · *v, s*

Horacio Casini is very interested in the interplay between quantum information theory, quantum field theory, and gravity. Recently, he has been working in entanglement entropy in quantum field theory and applications to AdS-CFT (holographic entanglement entropy) and the c-theorems.

Lucy J. Colwell

Applied Mathematics, Biology · MRC Laboratory of Molecular Biology · *v, f*

Lucy Colwell is interested in using and developing mathematical techniques to better understand the relationship between biological sequence and phenotype, in particular at the level of proteins and protein complexes.

Paolo Creminelli

Cosmology · The Abdus Salam International Centre for Theoretical Physics, Trieste · *s*
IBM Einstein Fellow

Paolo Creminelli is interested in early cosmology, particularly non-Gaussianities inflation and alternatives to inflation. His research also concerns modifications of gravity and large-scale structures.

Raffaele Tito D'Agnolo

Particle Physics · CERN, 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.

Tudor Dan Dimofte

Mathematical and Particle Physics · Institute for Advanced Study · *m*
William D. Loughlin Member; additional funding provided by the United States 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.

Ron Donagi

Algebraic Geometry and String Theory · University of Pennsylvania · *v*

Ron Donagi expects to focus on the geometry of super moduli space and its connections with string perturbation theory. He is also interested in the geometric Langlands program, in heterotic and F-theoretic phenomenology, and in other areas of high-energy physics that connect with algebraic geometry.

Cora Dvorkin

Cosmology, Astrophysics · Institute for Advanced Study
Funding provided by the National Science Foundation

Cora Dvorkin's research focuses on connecting ideas in theoretical physics to observable phenomena in cosmology. She is interested in a wide range of topics in theoretical cosmology, including inflation and its imprints in the cosmic microwave background, reionization, models of dark matter and methods to test them, and dark energy.

Thomas Faulkner

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

Thomas Faulkner is interested in black holes and the holographic correspondence, in particular their use as tools for understanding strongly correlated phenomena in quantum field theory. He is excited by attempts to understand certain finite density phases of matter using these tools.

Raphael Flauger

Theoretical Physics · Institute for Advanced Study
Funding provided by the Raymond and Beverly Sackler Foundation Fund

Raphael Flauger's research interests range from phenomenological questions in cosmology and particle physics to formal questions in quantum field theory and string theory. Currently, he is interested in extracting clues about fundamental physics from cosmological observations.

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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Song He
Particle Physics · Institute for Advanced Study
Zurich Financial Services Member; additional funding provided by The Ambrose Monell Foundation

Song He is interested in quantum field theory, string theory, and quantum gravity. He is currently working primarily on the physics and mathematics of scattering amplitudes and integrability in string and gauge dualities.

Johannes Henn
Particle Physics · Institute for Advanced Study · *m*
Marvin L. Goldberger Member; additional funding provided by the United States 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 United States 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
Funding provided by the National Science Foundation

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.

Veronika Hubeny
Theoretical Physics · Durham University · *s*
Funding provided by The Ambrose Monell Foundation

Veronika Hubeny's research concerns gravitational aspects of string theory, particularly within the context of gauge/gravity duality. She is especially keen to understand how bulk locality and causality emerge from dual field theory. She is also currently exploring the connection between fluid/gravity, blackfold approach, and the membrane paradigm of black holes.

Marina Huerta

Field Theory · Instituto Balseiro and Consejo Nacional de Investigaciones Científicas y Técnicas · *v, s*

The focus of Marina Huerta's research is on entanglement entropy in quantum field theory. This and other measures of information provide a very useful tool to study certain aspects of the theory inaccessible with other approaches.

Boaz Katz

Astrophysics · Institute for Advanced Study · *m*
John N. Bahcall Fellow

While at the Institute, Boaz Katz plans to work on various problems within the field of high-energy astrophysics. In particular, he intends to continue his study of the early emission from supernovae and the origin of cosmic rays.

Vladimir Kazakov

Quantum Field Theory, String Theory, Statistical Mechanics, Integrability · École Normale Supérieure, Paris
Funding provided by The Ambrose Monell Foundation

Vladimir Kazakov is applying the integrability and AdS/CFT correspondence methods to the study of the spectrum of anomalous dimensions, correlators, and other physical quantities in the maximally supersymmetric N=4 super-Yang-Mills theory. He is also interested in integrable quantum systems and matrix model applications to statistical mechanics and string theory problems.

Bence Kocsis

Astrophysics · Institute for Advanced Study
Funding provided by NASA and the W. M. Keck Foundation Fund

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.

Graham Kribs

Particle Physics · University of Oregon · *f*
Funding provided by The Ambrose Monell Foundation

Graham Kribs is interested in theoretical particle physics beyond the Standard Model. The onset of experimental data from the Large Hadron Collider combined with experimental searches for dark matter are rapidly shaping and constraining physics beyond the Standard Model. Kribs expects to exploit these results to develop and understand what lies in the terascale and beyond.

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Doron Kushnir
Astrophysics · Institute for Advanced Study
Martin A. and Helen Chooljian Founders' Circle 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
National Radio Astronomy Observatory Jansky Fellowship

Radio waves and gamma rays from galaxies come from cosmic rays, highly relativistic particles. Brian Lacki's research involves understanding this radiation: mapping the cosmic rays, especially in radio; galactic magnetic fields; and whether this radiation makes up the cosmic backgrounds of radio waves and gamma rays.

Ramalingam Loganayagam
Particle Physics · Institute for Advanced Study
Funding provided by the United States Department of Energy

Ramalingam Loganayagam's work is concerned with high-energy physics, strongly correlated electrons, and nuclear theory.

Sergio Lukic
Biology · Institute for Advanced Study
Addie and Harold Broitman Member in Biology

Sergio Lukic is interested in the evolution of strongly interacting molecular-genetic networks. To this end, he is developing mathematical and statistical tools in population genetics to study the dynamics of demography, natural selection, epistasis, and recombination in patterns of genetic variation in natural populations.

Shiraz Minwalla
Quantum Gravity, Quantum Field Theory, String Theory · Tata Institute of Fundamental Research, Mumbai
IBM Einstein Fellow

Shiraz Minwalla plans to study various aspects of gravitational dynamics, quantum field theory dynamics, and their interrelations via the AdS/CFT correspondence. He expects that he may work on the dynamics of vector matter–Chern Simons theories and the structure of the equations of hydrodynamics as revealed by their dual gravity description.
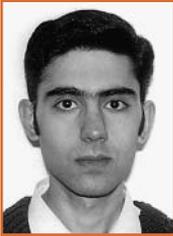
Mehrdad Mirbabayi

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.

Jonathan Mitchell

Astrophysics · University of California, Los Angeles · *f*
IBM Einstein Fellow

Jonathan Mitchell seeks to understand the physics of observed planetary phenomena. The primary emphasis of his recent work has been to explore the role of methane thermodynamics in atmospheric dynamics, climate dynamics, surface features, and the spin of Titan, Saturn's largest moon.

Kohta Murase

Astroparticle Physics · Institute for Advanced Study
Space Telescope Science Institute Hubble Fellow

Kohta Murase works on revealing the origins of high-energy particles propagating in the universe and understanding the underlying mechanisms. 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.

Jean-Claude Nicolas

Biology · Université Pierre et Marie Curie
Funding provided by the Florence Gould Foundation Fund

Jean-Claude Nicolas is interested in LINE elements, which are selfish genes that move in the human genome to new locations over the lifetime of the host. Mapping these movements and locations and determining the consequences has become possible in the last year. Computational approaches to this task are being developed.

Tatsuma Nishioka

Particle Physics · Institute for Advanced Study

Tatsuma Nishioka works in string theory, quantum gravity, and quantum field theory. He is especially interested in gauge/gravity duality and understanding the microscopic origin of black hole entropy and strongly coupled quantum field theories.

f First Term · *s* Second Term · *m* Long-term Member · *v* Visitor · *vp* Visiting Professor

SCHOOL OF NATURAL SCIENCES

Luca Peliti

Statistical Physics · Università degli Studi di Napoli Federico II · *f*

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.

Vasily Pestun

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

Vasily Pestun is interested in nonperturbative dynamics of strongly interacting nonabelian gauge theories, particularly exact results in supersymmetric gauge theories related to integrability, gauge-string correspondence, and topological field theories.

Rami Pugatch

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

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.

Mukund Rangamani

Particle Physics · Durham University · *s*
Funding provided by The Ambrose Monell Foundation

Mukund Rangamani's research interests are in the field of string theory and its applications to quantum gravity. Focused on obtaining a better understanding of the holographic correspondence between quantum field theories and strings theories, he plans to continue studying relativistic hydrodynamics, entanglement entropy, and black hole dynamics at the Institute.

Leonardo Rastelli

Quantum Field Theory, String Theory · Stony Brook University, The State University of New York · *f*

Leonardo Rastelli's research lies at the intersection of string theory and quantum field theory, from foundational aspects of string theory and holography to purely field theoretical problems. He is currently interested in exploring and charting the space of superconformal field theories in various dimensions, especially with the tools of the modern bootstrap program.

f First Term · *s* Second Term · *m* Long-term Member · *v* Visitor · *vp* Visiting Professor

Shlomo Razamat

Theoretical Physics · Institute for Advanced Study
Martin A. and Helen Chooljian Member; additional funding provided by the National Science Foundation

Shlomo Razamat's research interests concern different aspects of quantum field theory and string theory and the interplay between them. He is mainly working on gauge/string (gravity) duality and on studying properties of strongly coupled supersymmetric field theories.

Amit Sever

String Theory, Quantum Field Theory · Perimeter Institute for Theoretical Physics · *s*
Funding provided by the United States Department of Energy

Amit Sever is working to solve the simplest example of an interacting quantum field theory in four dimensions: N=4 SYM, which is an interacting conformal gauge theory with maximal supersymmetry. He is focusing on computing scattering amplitudes using integrability and has started computing correlation functions, the next step in complexity.
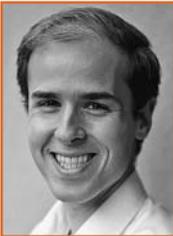
David Simmons-Duffin

Particle Physics · Institute for Advanced Study
Funding provided by the United States 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.

David S. Spiegel

Exoplanetary Science · Institute for Advanced Study
AMIAS Member

Dave Spiegel, whose interests range from X-ray studies of the intergalactic medium to understanding the origin of highly magnetic white dwarf stars, is focusing on theoretical studies of the climates of, and radiative transfer in, exoplanetary atmospheres; on habitability models of terrestrial exoplanets; and on radiation-dynamical models of gas giant planets.

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.

f First Term · *s* Second Term · *m* Long-term Member · *v* Visitor · *vp* Visiting Professor

SCHOOL OF NATURAL SCIENCES

Tiberiu Tesileanu

Biology · Institute for Advanced Study
Charles L. Brown Member in Biology

Tiberiu Tesileanu is currently working on understanding the statistical properties of sequences of proteins that share a common evolutionary history, and the connections between these properties and protein structure and function. He is also starting to think about mental exploration in artificial neural networks.

Tsvi Tlusty

Biology · Institute for Advanced Study
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.

Jihad Touma

Applied Mathematics, Astrophysical Dynamics · American University of Beirut · *v*

Jihad Touma studies planetary and galactic dynamics. He plans to pursue joint work with Scott Tremaine on the statistical mechanics of self-gravitating stellar clusters around supermassive black holes in galactic nuclei.

Brian M. Willett

Particle Physics · Institute for Advanced Study
Funding provided by the United States 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.

Dan Xie

Particle Physics · Institute for Advanced Study
Funding provided by the United States Department of Energy

Dan Xie's research focuses on string theory and quantum field theory and the mathematical structure behind these physical theories. At the Institute, he will continue studying dynamics of quantum field theory in various dimensions and their phenomenological applications.

f First Term · *s* Second Term · *m* Long-term Member · *v* Visitor · *vp* Visiting Professor

BingKan Xue
Biology · Institute for Advanced Study

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.

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

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 NATURAL SCIENCES

f First Term · *s* Second Term · *m* Long-term Member · *v* Visitor · *vp* Visiting Professor

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 2013–14 academic year is "The Environmental Turn and the Human Sciences." The widespread perception that humanity faces a series of related environmental challenges—climate change, growing human population, food security, energy crisis, shortage of fresh water, and so on—has spurred many disciplines to attempt to make the environment a central concern of their foundational paradigms. Economists, sociologists, historians, policy scientists and others have begun to address the issue of sustainability and the question of "the commons" in human affairs. Anthropologists and evolutionary biologists have begun to study communities facing environmental disruption while new and interdisciplinary areas of investigation have emerged under the rubric of "environmental humanities." Historians have begun to write long-term histories of energy consumption and to connect environmental histories to histories of capitalism, empires, and globalization. During 2013–14, we hope to develop a shared conversation on the strategies that different disciplines are adopting to deal with the challenge of environmental crises. This seminar will be jointly led by Didier Fassin, James D. Wolfensohn Professor, and Joan Wallach Scott, Harold F. Linder Professor.

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 field studies 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 a new field of research, critical moral anthropology, which explores the historical, social, and political signification of moral forms involved in everyday judgment and action as well as international humanitarianism or asylum granting. He is currently conducting an ethnography of several institutions that deal mostly with immigrants and minorities, namely 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 a political 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
Harold F. Linder Professor

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.
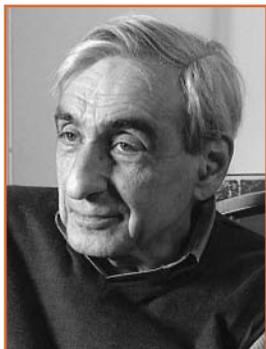
Michael Walzer
Professor Emeritus

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.

SCHOOL OF SOCIAL SCIENCE

Nikhil Anand

Anthropology, Geography · University of Minnesota
Wolfensohn Family Member

Nikhil Anand's research focuses on the politics and ecology of urban infrastructures, and the social and material relations these entail. At the Institute, he plans to explore how settlers and other marginalized residents overcome the structural exclusions of limited liberal government to claim water in Mumbai.

Cristina Beltrán

Political Science · New York University

Cristina Beltrán is drawing on classic and contemporary political theory, affect theory, and work on party politics, aesthetics, and representation to explore how conservative leaders and organizations attract Latino voters through emotive and aesthetic appeals that resonate with voters' desires and ambitions while sometimes eclipsing questions of ideology and policy preference.

Elizabeth Popp Berman

Sociology · University at Albany, State University of New York
Richard B. Fisher Member

Elizabeth Popp Berman studies how expert knowledge is produced and used and how we think about markets and the economy. Specifically, she is examining how the intellectual tools of economics shaped U.S. public policy in three domains—science, antitrust, and antipoverty policy—from 1960 to 1985.

Milton Cameron

Philosophy · The Australian National University · *v*

Milton Cameron is researching ways in which modern architects and architectural historians sought to associate themselves with Albert Einstein to gain intellectual credibility for their own work, or attempted to use aspects of Einstein's theories as metaphors for their own thought processes or as catalysts for paradigm shift within architectural design.

Brandice Canes-Wrone

Political Science · Princeton University
Roger W. Ferguson, Jr., and Annette L. Nazareth Member

Brandice Canes-Wrone is interested in research areas that encompass domestic politics and political economy. At the Institute, she plans to investigate the relationship between political uncertainty and economic outcomes; analyze the effects of judicial selection procedures on court rulings; and look at the impact of campaign finance procedures on elite-level polarization.

f First Term · *s* Second Term · *v* Visitor · *j* Joint Member of Historical Studies

SCHOOL OF SOCIAL SCIENCE

Filippo Cesarano
Economics · Institute for Advanced Study · *v, f*

Filippo Cesarano is exploring the main forces driving the evolution of monetary arrangements, particularly how the quantum leap in information technology triggered a wave of innovation in money and finance that raised a variety of issues, both theoretical and institutional, as yet largely unanswered.

Yvonne Chiu
Political Science · The University of Hong Kong

Although war is often perceived as the epitome of conflict, Yvonne Chiu argues that modern warfare is a cooperative enterprise, during fighting and in its use as a tool for conflict resolution. At the Institute, she plans to explore the history, development, and contemporary nature of that cooperation.

Nitsan Chorev
Sociology · Brown University
AMIAS Member

Nitsan Chorev is studying the pharmaceutical markets in Kenya, Tanzania, and Uganda to explore the conditions for social development and economic growth.

Elizabeth Anne Davis
Anthropology · Princeton University

Elizabeth Davis's research concerns secrecy, transparency, and statecraft in Cyprus following its division into Greek-Cypriot and Turkish-Cypriot regions in 1974. She plans to focus on three domains of knowledge production where suspicions about the violent events of the 1960s–70s are being transformed into evidence: forensic science, conspiracy theory, and documentary film.

Omar Dewachi
Anthropology · American University of Beirut · *v, f*

Omar Dewachi's research interrogates the tensions between the necropolitics of war and the biopolitics of statehood in post-U.S.-invasion Iraq. He plans to explore the rise and fall of state-sponsored medicine and its role in the formation, governing, and transformation of state and citizenship under historical conditions of post-colonialism and contemporary neoliberal warfare.

f First Term · *s* Second Term · *v* Visitor · *j* Joint Member of Historical Studies

SCHOOL OF SOCIAL SCIENCE

Pinar Doğan

Economics · Institute for Advanced Study · *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."

Jeffrey Flynn

Philosophy · Fordham University

Jeffrey Flynn works on human rights and humanitarianism. His current project on humanitarianism combines empirical and normative perspectives to analyze the historical rise of the humanitarian sentiment and organized forms of humanitarianism in the modern West in conjunction with critical reflection on contemporary responses to distant suffering.

David I. Grazian

Sociology · University of Pennsylvania

David Grazian is a cultural sociologist and urban ethnographer who studies landscapes of entertainment and popular culture in cities. Drawing on four years of fieldwork, he is completing a book manuscript that examines the contradictions that have come to define the social world of the contemporary American metropolitan zoo.

Mark Greif

Literature, Intellectual History · The New School

Mark Greif is researching the rhetoric of radical reform and moral appeal in the United States and Western Europe from the late nineteenth century to the early twenty-first century, as reformers developed languages to connect nonhuman objects to new conceptions of the human subject.

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f First Term · *s* Second Term · *v* Visitor · *j* Joint Member of Historical Studies

Wendy Griswold

Sociology · Northwestern University
Rosanna and Charles Jaffin Founders' Circle Member

Wendy Griswold is studying literature and American cultural "region-alism," which denotes distinctive, place-based cultural forms at any level. Her research, which extends from the nineteenth century to the present, supports the thesis that literature—not just works but authors, institutions, and readers—produces the understandings and practices associated with enduring cultures of place.

Joseph D. Hankins

Anthropology · University of California, San Diego

Joseph Hankins's research unpacks labor as an exchange point shaping human/human and human/nonhuman relations. He plans to examine the politics of stigmatized forms of labor in Japan, e.g., leather and meat production, and explore labor-based projects to "reclaim life" from a capitalism understood as environmentally and ethically corrosive.

Dagmar Herzog

History · The Graduate Center, The City University of New York · *v, s*

Although psychoanalysis is often taken to be ahistorical in its view of human nature, Dagmar Herzog's contention is the opposite. Situated at the intersections of psychoanalysis and the social sciences, her research concerns the uneasy encounters of Freudian theories about aggression, trauma, desire, fear, and pleasure—and the very nature of the human self and its motivations—with the calamitous events of World War II and beyond.

Gabrielle Benette Jackson

Philosophy · University of Toronto · *v*

Gabrielle Jackson's research concerns the areas of overlap among philosophy of mind, cognitive science, and phenomenology. She is grappling with such questions as what do pathologies of movement reveal about normal human action, how do skillful actions structure perceptual space, and how might bodily habits shape gender norms.

Dale Jamieson

Environmental Studies, Philosophy · New York University

Dale Jamieson plans to analyze why we have failed to successfully address the problems of climate change, say what we should learn from our mistakes, and propose ways of living with the consequences.

Joseph P. Masco

Cultural Anthropology, Science Studies · The University of Chicago
Ralph E. and Doris M. Hansmann Member

How can we reconceive "security" in an age of planetary ecological crisis? Joseph Masco's research considers how the cumulative impacts of industry on the global biosphere challenge longstanding conceptualizations of nature, modernity, and progress. Attending to new forms of local and global environmental threat, his research calls for a post-national form of security.

Ann McGrath

History · The Australian National University
Louise and John Steffens Founders' Circle Member

Ann McGrath's research concerns Lady Mungo, who lived in Australia approximately fifty thousand years ago, particularly how after her "discovery" in 1968, relations of research, politics, and kinship between scientists, pastoralists, and Aboriginal custodians created a complex story promising reconceptualizations for the history discipline.

Ramah McKay

Anthropology · University of Minnesota · *v*

Ramah McKay's current project explores how contemporary experiences of transnational medical assistance in Mozambique have given rise to a unique form of medical governance, one in which the presence of multiple institutions, actors, and epistemologies of health are an everyday part of health policy and care.

Vanessa Ogle

International and Global History · University of Pennsylvania

In the increasingly interconnected world of the nineteenth century, Europeans and Americans launched numerous campaigns for scientific, legal, and other standards. Vanessa Ogle seeks to demonstrate how imposing universal norms like uniform time in societies that lived by other standards paradoxically had the unintended consequence of creating even more difference.

John F. Padgett

Political Science · The University of Chicago
Deutsche Bank Member

John Padgett's research concerns the coevolution of political, economic, and kinship networks in Renaissance Florence from 1300 to 1500, the emergence of organizational novelty in a wide range of settings from medieval Tuscany to contemporary Silicon Valley, and the coevolution of production and communication networks from the perspective of autocatalysis.

f First Term · *s* Second Term · *v* Visitor · *j* Joint Member of Historical Studies

SCHOOL OF SOCIAL SCIENCE

Manuela Lavinas Picq

Political Science · Universidad San Francisco de Quito

Manuela Picq is questioning common understandings of nature—how we define it and locate it outside cosmopolitanism—to defy assumptions of political modernity. Through a historical reading of the international relations of the Amazon, she is exploring what modernity looks like when not attached to or governed by states.

Noah Salomon

Religion · Carleton College

Noah Salomon's research examines the project of the "Islamic state" in contemporary Sudan through exploring its interventions into four key domains: politics, aesthetics, epistemology, and subjectivity. His work depicts Islamic revival in Sudan not merely as a response to modern secular politics and modes of being, but as a node in a much longer conversation in Islamic thought, augmented and reappropriated as state projects of Islamic reform became objects of debate and controversy.

Kim Lane Scheppele

Law · Princeton University · *j*

Kim Scheppele's research tracks the debate over the Holy Crown of St. Stephen—the twentieth-century interwar irredentist symbol foreground in Hungary's new nationalist constitution of 2012. She traces the debate back to its medieval sources and reworks its origin story by exploring the twin ideas of abjection and awe in the construction of constitutional community.

Sverker Sörlin

Environmental History, History of Science · KTH Royal Institute of Technology, Stockholm

Sverker Sörlin is interested in how work in the environmental humanities has tried to make sense of human-nature relationships during the Anthropocene, or the last two hundred years. Sörlin will focus on how retemporalization and inventing new pasts and futures take place in the face of climate and global change.

Ellen Stroud

U.S. Urban and Environmental History · Bryn Mawr College
Frederick Burkhardt Fellowship funded by the American Council of Learned Societies

Ellen Stroud's research focuses on unexpected connections between social processes and both built and natural environments. Her current book project, an environmental history of the modern American corpse, examines the role of dead human bodies in the shaping of twentieth-century American landscapes.

f First Term · *s* Second Term · *v* Visitor · *j* Joint Member of Historical Studies

Joanna Tokarska-Bakir

Cultural and Historical Anthropology · Polish Academy of Sciences, Warsaw · *v, f*

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.

Henning Trüper

History · Centre de Recherches Historiques, École des Hautes Études en Sciences Sociales, Paris

Henning Trüper's research revisits European Orientalism as philology and explores the fragmentation of the ontological commitments of philology in regard to its objects of research (natural languages, grammars, texts, scripts, histories, antiquities). This perspective entails abandoning the unity of Orientalism and opens novel ways of understanding its role for European modernity.

Richard York

Sociology · University of Oregon
Friends of the Institute for Advanced Study Member

Richard York's research examines how structural characteristics of societies (e.g., demographic, economic, and technological factors) influence the quantity and types of energy use. He is interested in the extent to which the development of non-fossil-fuel energy sources displaces fossil fuels and how this differs across nations.

SCHOOL OF SOCIAL SCIENCE

Program in Interdisciplinary Studies

The Program in Interdisciplinary Studies explores different ways of viewing the world, spanning a range of disciplines from physics and astrophysics, geology, paleontology, and biology, to artificial intelligence, cognitive psychology, and philosophy. The most recent interdisciplinary focus is on questions related to 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*

Henderson 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 S. Duckworth
Philosophy · Temple University · *v, f*

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.

Yuka Fujii

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

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.

Jon Lindsay

Security Studies · University of California, San Diego · *v*

Jon Lindsay studies the impact of the information revolution on international security, especially cybersecurity, deterrence strategy, military innovation, and information security in China. At the Institute, he is working with Piet Hut to investigate the parallels between cultural and biological evolution.

Hyun Ok Park

East Asian Studies · York University · *v, f*

Hyun Ok Park is completing an investigation of how the task of rapprochement of the two Koreas has been changed by the formation of ethnic sovereignty in the post–Cold War era and concerns democratic politics that imagines the market as a mechanism of reparation, peace, and human rights.

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.

PROGRAM IN INTERDISCIPLINARY STUDIES

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. Funding for the Director's Visitors program for 2012–13 and 2013–14 has been generously provided by Maureen and John Hendricks.

Nickolas Barris
Feature Film Writer-Producer, Imaginary Films; Founder, Foundation for Lorentz & Einstein Media Research and Application

Nickolas Barris is exploring how curiosity and scientific imagination foster innovation and cultural progress, as well as the role of music, art, and nature to inspire scientific creativity. With Albert Einstein and Dutch physicist Hendrik Lorentz as key models, he will explore the courage required to create new frontiers of science.

Graham Farmelo
Writer; Adjunct Professor of Physics, Northeastern University; Bye-Fellow, Churchill College, University of Cambridge

Graham Farmelo is completing his book "Churchill's Bomb," forthcoming in October 2013, which concerns Winston Churchill's role in developing nuclear weapons, his relationships with several nuclear physicists, and his work on nuclear policy. He is also beginning research for his next book about the symbiotic relationships between pure mathematics and fundamental physics.
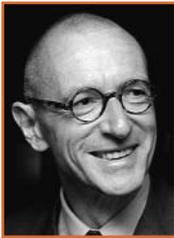
Ulrich Raulff
Director, Deutsches Literaturarchiv Marbach

Ulrich Raulff is writing a history of the study of humanities and social sciences at the Institute for Advanced Study between the start of the Cold War in the mid-1940s and the establishment of the School of Social Sciences in the mid-1970s, when a thoroughgoing change in the dominant discourses took root.

Siobhan Roberts
Writer, Journalist
Funding provided by the Otto Neugebauer Fund

Siobhan Roberts is working on a book with Professor Helmut Hofer about the mathematician Andreas Floer. She is also editing her biography of Princeton mathematician John Horton Conway, forthcoming with Bloomsbury/Walker & Company.

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.

As of July 1, 2013, composer Sebastian Currier has joined the Institute community as Artist-in-Residence. He will curate the Edward T. Cone Concert series and host 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 the 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 2013–14 season, three new works will be premiered: *Cadence, Fugue, Fade*, commissioned by the American Brass Quintet, *Artificial Memory*, written for the Paul Dresher Ensemble, and *Parallel Worlds*, commissioned by the Chamber Music Society of Lincoln Center.

Administration

Robbert Dijkgraaf
Director and Leon Levy Professor

Karen Cuozzo
Assistant to the Director

Sile Bao
Special Assistant to the Director

John Masten
*Associate Director for Finance
and Administration*

Anthony Bordieri, Jr.
Manager of Facilities

Michael Ciccone
Manager of Administrative Services

Michael Klompus
Manager of Human Resources

Mary Mazza
Comptroller

Michel Reymond
Chef/Manager, Dining Services

Michael Gehret
*Associate Director for Development
and Public Affairs*

Christine Ferrara
Senior Public Affairs Officer

Catherine G. Fleming
Senior Development Officer

Pamela Hughes
Senior Development Officer

Kelly Devine Thomas
Senior Publications Officer

Library Administration

Momota Ganguli
Librarian, Mathematics and Natural Sciences

Marcia Tucker
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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: Kazuya Yonekura (kneeling), Member in the School of Natural Sciences, with Yuji Tachikawa (Member, 2006–11) Photo: Andrea Kane