IAS

Institute for Advanced Study

Faculty and Members 2008–2009

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 Photo: Bentley Drezner

Contents

Information contained herein is current as of September 24, 2008.

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 fundamental 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.

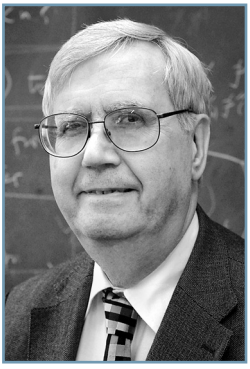
Abraham Flexner was succeeded as Director in 1939 by Frank Aydelotte, in 1947 by J. Robert Oppenheimer, in 1966 by Carl Kaysen, in 1976 by Harry Woolf, in 1987 by Marvin L. Goldberger, and in 1991 by Phillip A. Griffiths. In January 2004, Peter Goddard became the Institute's eighth Director.

Dedicated to the disinterested pursuit of knowledge, 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 twenty-seven 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 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. Small in number and organized in four Schools (Historical Studies, Mathematics, Natural Sciences, and Social Science), the Faculty and Members can 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 5,000 former Members hold positions of intellectual and scientific leadership in the United States and abroad. Some twenty-two Nobel Laureates and thirty-four out of forty-eight 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 120,000 volumes and subscribes to more than 1,200 journals. The Mathematics–Natural Sciences Library contains over 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 800 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.



Peter Goddard
Director

Peter Goddard, a mathematical physicist, is distinguished for his pioneering contributions in the areas of string theory, quantum field theory, and conformal field theory. Formerly Master of St. John's College and Professor of Theoretical Physics in the University of Cambridge, England, he played a key role in the establishment of the university's Isaac Newton Institute for Mathematical Sciences, serving as its first Deputy Director, and the University of Cambridge Centre for Mathematical Sciences, one of the world's largest centers for research and teaching in the mathematical sciences.

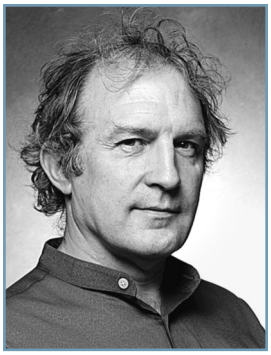
School of Historical Studies

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. Support has also been extended to the history of other regions, including central Asia, India, and Africa.

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.

Faculty

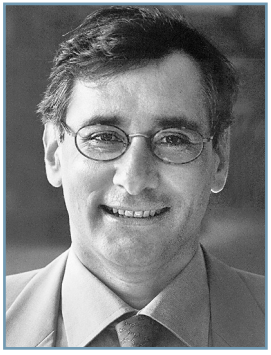


Yve-Alain Bois
Professor . Art History

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 in the past decade, 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.

Caroline Walker Bynum
Professor . Western 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 created the paradigm for the study of women's piety that dominates the field of Medieval Studies today and have helped propel the history of the body into a major area of premodern history. She is currently working on theories of identity in medieval theology and on the role of miraculous objects in Christianity from the twelfth century to the early years of the sixteenth-century reformations.



Angelos Chaniotis *(from July 1, 2010)*
Professor . Ancient History

Angelos Chaniotis is internationally regarded for his original and wide-ranging research in the social, cultural, religious, legal, and economic history of the Hellenistic world and the Roman East. The author of four books and some 150 articles and book contributions, and the editor of fourteen volumes, he works in innovative ways on a wide variety of topics: war, memory, identity, emotions, the communicative aspects of rituals, and strategies of persuasion in the ancient world. Significant questions and dialogues in the field have grown out of his pioneering contributions, which have helped to advance understanding of previously unexplored aspects of the ancient world.

Faculty

Patricia Crone

Andrew W. Mellon Professor · Islamic History

Patricia Crone's scholarly and intellectual activities concentrate on the history of late antiquity and the early Middle Ages, ca. 630 to 1100, when a recognized Islamic culture appeared and subsequently rose to dominate the area from Spain to the frontiers of China and India. The author of numerous books and published papers, Professor Crone challenges long-held explanations and provides new approaches for the social, economic, legal, and religious patterns that transformed late antiquity.

Nicola Di Cosmo

Luce Foundation Professor in East Asian Studies · East Asian Studies

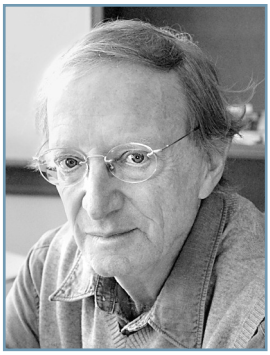
Nicola Di Cosmo's research focuses on the history of the relations between China and Inner Asia from prehistory to the early modern period. He is interested in the archaeology of China's northern frontiers, cultural contacts between China and Central Asia, and the military, political, and social history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

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 the eighteenth-century French materialists) on the Enlightenment and on the emergence of the modern ideas of democracy, equality, toleration, freedom of the press, and individual freedom.

Faculty

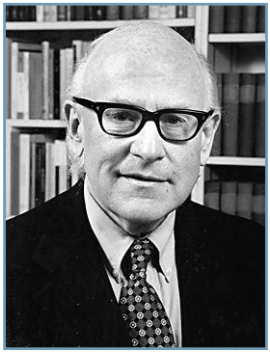


Avishai Margalit
George F. Kennan Professor · Philosophy and Modern International Relations

Avishai Margalit is one of the foremost thinkers and commentators on the contemporary human condition, the moral issues of our time, and current problems facing Western societies. In addition to his influence as a philosopher, he is highly regarded for his profound and cogent observations of the Israeli-Palestinian conflict and the broader struggle between Islam and the West. The author of a number of influential books, Margalit has transformed philosophical perspectives on a range of political and societal issues.

Heinrich von Staden
Professor · Classics and History of Science

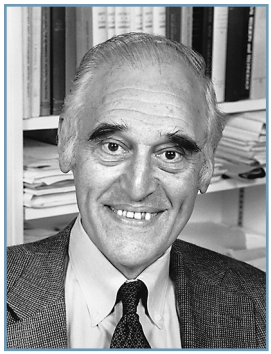
Heinrich von Staden has written on a variety of topics in ancient science, medicine, philosophy, and literary theory, from the fifth century BC to the fifth century AD. Drawing on a wide range of scientific, philosophical, and religious sources, he has contributed to the transformation of the history of ancient science and medicine, particularly of the Hellenistic period. His current projects include a book on Erasistratus (one of the two Hellenistic pioneers of human dissection), a study of the exegesis of scientific texts in antiquity, and further work on the "semantics of matter" in ancient science.



Glen W. Bowersock
Professor Emeritus · Ancient History

Glen W. Bowersock is an authority on Greek, Roman, and Near Eastern history and culture as well as the classical tradition in modern literature. 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.

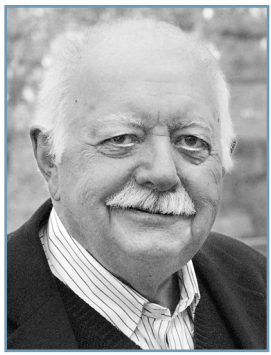
Faculty



Giles Constable

Professor Emeritus . Medieval History

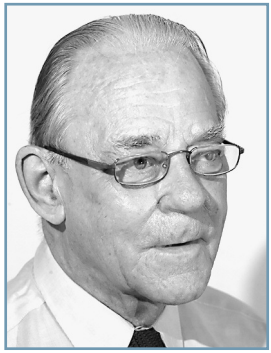
The medievalist Giles Constable is the author or editor of more than twenty books in the area of medieval religious and intellectual history, concerning, among other subjects, the origins of monastic tithes, Peter the Venerable, people and power of Byzantium, medieval religious and social thought, the reformation of the twelfth century, and Renaissance Florence as seen through the case of Antonio Rinaldeschi. He has written over a hundred articles, most of which have been reprinted in five volumes, and is currently working on books on twelfth-century crusading and on the early history of Cluny.



Oleg Grabar

Professor Emeritus . Islamic Art and Culture

Oleg Grabar's research has had a profound and far-reaching influence on the study of Islamic art and architecture. In his many authoritative books, he has introduced readers to the formation of Islamic art, the idea of ornament in the context of Islamic art, the physical and ideological influence of early Islam on Jerusalem, and a breadth of other subjects elucidating the history and range of Islamic art, architecture, decorative arts, and manuscripts. His extensive archaeological expeditions and research trips cover the vast expanse of the Islamic world in Africa, the Middle East, and Muslim Asia.

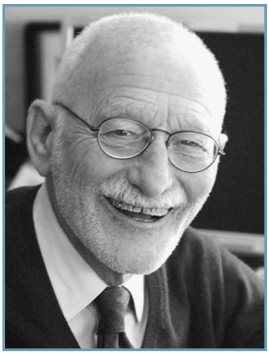


Christian Habicht

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 in the centuries between the fall of the Athenian Empire and the establishment of the Roman Empire. He is also the author of books on the cults of the Hellenistic kings, on the Maccabees, and on Pausanias, among others.

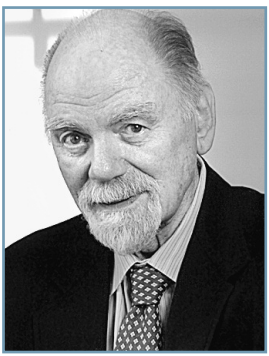
Faculty



Irving Lavin

Professor Emeritus · Art History

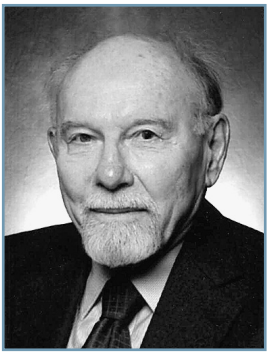
Irving Lavin is one of America's most distinguished art historians. He has written extensively on the history of art from late antiquity to modern times, including numerous studies on Italian painting, sculpture, and architecture of the Renaissance and Baroque periods.



Peter Paret

Professor Emeritus · Modern European History

Peter Paret's research is directed at two different but often related areas in history: conceptions of war and of its uses, and the interaction of the arts with politics and ideology. This fall he will give the 2008 Lees Knowles Lectures at Cambridge University, in which he will address four varieties of history of the same episode: narrative, cultural history, political and institutional history, and theoretical analysis. A second project is an exhibition, to open next March in the Art Museum of Princeton University, of Ernst Barlach's illustrations of two German literary works, the Nibelungen epic and the Walpurgis Night in Goethe's *Faust*.



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.

Members, Visitors, and Research Staff

Pamela Barmash
Biblical Studies, Ancient Law • Washington University in St. Louis
Martin L. and Sarah F. Leibowitz Member

Pamela Barmash's research project examines interpretation as an enduring human activity. She will look at how it originated, how particular counterintuitive forms of it persisted in radically different cultures, the first examples of legal interpretation, and what changed in cultural life that enabled, if not necessitated, the rise of formal interpretation.

Elisheva Baumgarten
Medieval History • Bar Ilan University
The Gladys Krieble Delmas Foundation Member

Elisheva Baumgarten's project examines religious beliefs and practices in the Jewish communities in Germany and northern France during the High Middle Ages, with an emphasis on gender as a category for studying medieval Jewish piety. The practices of Jewish women will be compared with those of Jewish men and with contemporary Christians.

Susanne Bobzien
Ancient Philosophy, Philosophy of Logic and Language • Yale University
Funding provided by the National Endowment for the Humanities and The Andrew W. Mellon Foundation

Susanne Bobzien is conducting a book-length study on Hellenistic philosophical logic, to show that Hellenistic thinkers explored most problems of contemporary philosophical logic and introduced sophisticated theories to solve these problems, starting from paradoxes such as Liar, Sorites, and Master Argument.

Corinne Bonnet
Ancient History • Université de Toulouse II–Le Mirail • *s*
Hetty Goldman Member

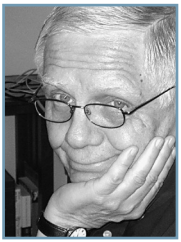
Corinne Bonnet aims to study the evolution of Phoenician religion after Alexander's conquest. Local traditions were involved in a process of "Hellenization" and "Romanization" that transformed the ancestral practices and beliefs. Between innovation and tradition, particularism and universalism, her study will observe the phenomena, through different case studies, of cultural interactions in a hybrid historical context.

Patricia Clavin
Modern European and International History • University of Oxford • *v, s*

Patricia Clavin is exploring the dynamic relationship between the League of Nations' economic and financial organization (the first global economic institution of its kind) and transnational networks of economists and financiers, NGOs, governments, and citizens in the years between 1919 and 1946. Its work shaped the development of a new language of economic entitlement and the new institutions that facilitated international and regional cooperation after 1945.

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

Members, Visitors, and Research Staff



Edwin Munson Curley
Philosophy · University of Michigan
Funding provided by The Andrew W. Mellon Foundation

Edwin Curley is working on a book on the rise of religious toleration in Europe during the early modern period, examining the arguments for and against toleration. Among the opponents of toleration, he will focus on Augustine and Aquinas. Among the advocates: Castellio, Montaigne, Bodin, Spinoza, Bayle, Locke, Montesquieu, Diderot, and Rousseau.

Wiebke Denecke
East Asian Studies · Barnard College
Funding provided by The Andrew W. Mellon Foundation Fellowships for Assistant Professors

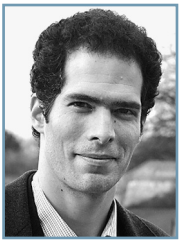
Wiebke Denecke works on premodern Chinese and Japanese literature and is interested in comparative studies of antiquity. She is working on a book that examines how early Japanese and Latin writers wrote their own literature through and against the literary precedents of their respective reference cultures of China and Greece.

Yaacov Deutsch
Early Modern History · The Hebrew University of Jerusalem · *v, f*

Yaacov Deutsch works on Christian-Jewish relations and especially on the knowledge the two groups had about each other's practices and theology in early modern Germany. His project discusses the ways Jews attacked Christianity and Christian criticism of Jewish rituals and practices.

Damian Dombrowski
Art History · Julius-Maximilians-Universität Würzburg · *f*
Funding provided by The Herodotus Fund

Damian Dombrowski's ambition is to complete his monograph on Botticelli's religious paintings, with special emphasis on the intersection of Neoplatonic thought and stylistic expression. He also wishes to gather experience in view of his project to establish the study of world art at his home university.



Khaled El-Rouayheb
Islamic Intellectual History · Harvard University
Funding provided by The Andrew W. Mellon Foundation Fellowships for Assistant Professors

Khaled El-Rouayheb is writing a monograph on intellectual currents in the Arabic-Islamic world in the seventeenth century. While modern scholars have tended to assume that it was marked by intellectual stagnation, he will try to show that pre-"revivalist" Islamic intellectual life was much more dynamic and sophisticated than most historians have suspected.

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

Members, Visitors, and Research Staff

Christopher Athanasious Faraone

Classics, Ancient Religion and Medicine · The University of Chicago · *f*
Hetty Goldman Member; additional funding provided by The Andrew W. Mellon Foundation

Christopher Faraone aims to study the magical gemstones and other amulets from the Greco-Roman period in hopes of providing a description of their function and a history of their use from pre-Roman times to the end of the imperial period.

Klaus-Dietrich Fischer

Classics, History of Medicine · Johannes Gutenberg-Universität Mainz · *s*
Fritz Thyssen Stiftung Member

Klaus-Dietrich Fischer is working on a new edition of *The Quaestiones medicinales*, a catechism of medical terms addressed to young people at the beginning of their medical training that draws on several strands, obviously Greek, but survives only in a Latin translation from late antiquity.

Norbert Frei

Modern History · Friedrich-Schiller-Universität Jena
Fritz Thyssen Stiftung Member; additional funding provided by The Andrew W. Mellon Foundation

Norbert Frei plans to explore the representation of World War II in the collective consciousness of Germans through the different facets of German society's self-perception from the outbreak of the war to Germany's defeat and the subsequent Nuremberg trials.

Jason Duane Geary

Musicology · University of Michigan
Funding provided by The Herodotus Fund

Jason Geary is working on a book that will explore the link between music and the ancient Greek legacy in Germany of the mid-to-late nineteenth century. It will examine, among other things, Mendelssohn's incidental music to Sophocles' *Antigone* (1841) and *Oedipus at Colonus* (1845) and also seeks to reassess Wagner's appropriation of the Greeks.

Ralph Ghadban

Muslim Migration in the West · Evangelische Fachhochschule Berlin
Robert Bosch Stiftung Member

Ralph Ghadban is examining the chances of the Fiqh of Minorities, a new field of Islamic law that intends to integrate Muslims into Western societies, to modernize Islam, and to conciliate it with human rights.

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

Members, Visitors, and Research Staff

Zvi Gitelman

Russian and East European History and Politics · University of Michigan · *s*
Funding provided by the Fund for Historical Studies and The Andrew W. Mellon Foundation

Of the six million Jewish victims of the Holocaust, about 2.5 million were Soviet citizens. Zvi Gitelman will examine three perspectives of the Soviet experience—those of Soviet authorities, Jewish service men and women, and "collaborators" with the invading Axis forces—and try to illuminate the ambiguities of policymaking, motivations for combat, and collaboration.

Regina Grafe

Spanish Economic History · Northwestern University
Funding provided by The Andrew W. Mellon Foundation Fellowships for Assistant Professors

Regina Grafe is studying Spain's slow and regionally diverse economic transformation ca. 1650–1820. Through a comparative study of political fragmentation and trade patterns, she is investigating how coastal elites relied on social and cultural cohesion in the regions in order to substitute external for internal integration and thus preserve regional political power.

Kathryn Gutzwiller

Classics · University of Cincinnati · *s*
Hetty Goldman Member

Kathryn Gutzwiller is producing an edition and commentary devoted to the epigrams by Meleager of Gadara, an erotic poet and anthologizer who occupied a pivotal position in the transition from Hellenistic to Roman literary culture. Her aim is to emphasize visual imagery, social practices, erotic attitudes, and philosophical views.

Peter Isaac Holquist

History · University of Pennsylvania · *f*
Edwin C. and Elizabeth A. Whitehead Fellow

Peter Holquist's present project addresses the emergence and consolidation of the law of war from 1868 to 1917 and analyzes the unexpectedly important role of the Russian Empire in this process. It is a study examining both intellectual concepts and actual military practices.

Carl Augustus Huffman

Classics, Ancient Philosophy · DePauw University · *v, s*

Carl Huffman works on ancient Pythagoreanism. He is writing a book on the fourth-century BC Greek philosopher Aristoxenus as a historian of philosophy and biographer of philosophers. Aristoxenus, a member of Aristotle's school, is an important source for early Pythagoreanism and wrote the first lives of Socrates and Plato.

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

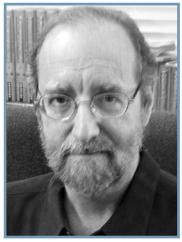
Members, Visitors, and Research Staff

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.

Peter Grant Jeffery
Musicology, Liturgiology · Princeton University · *v*

Peter Grant Jeffery is working on a translation of the earliest (eighth century) description of how the pope celebrates Mass, which became the model for the standard form of the medieval Mass and contains much other information about the governance of the city during this period.



Paul W. Kroll
Chinese Literature · University of Colorado
Funding provided by the National Endowment for the Humanities and The Andrew W. Mellon Foundation

Paul Kroll's research covers related aspects of medieval Chinese literature, history, and religion. He is currently working on a history of Tang-dynasty (618–907) literature, which seeks to integrate various genres, especially poetry, in their broader cultural context.

Ulrich Lehner
Enlightenment, History of Religious Thought, Monasticism · Marquette University · *s*
Funding provided by The Herodotus Fund

Ulrich Lehner is investigating the changes that took place in the Benedictine monasteries in Bavaria and Austria between 1750 and 1803, the impact that philosophy, theology, and society (such as new patterns of communication) had on monastic life, and how Catholicism and religious communities changed during the Enlightenment.

Miaw-fen Lu
Chinese Intellectual and Cultural History · Institute of Modern History, Academia Sinica · *v*

Miaw-fen Lu is studying Chinese filial culture in the late imperial periods, centering on the text of *The Classic of Filial Piety*. She will look at the text from a variety of different perspectives, including political history, classical studies, education and intellectual histories, gender issues, and ritual practices.

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

Members, Visitors, and Research Staff

Melissa Macauley
Chinese History · Northwestern University
The Starr Foundation East Asian Studies Endowment Fund Member

Melissa Macauley is studying a group of Chinese sojourners in their native place (Chaozhou) and in Shanghai, the British Straits Settlements, and French Indochina. Relying on superior institutions of migration and disciplined advancement of group interests, they prevailed over the Western imperialists and emerged as the economic masters of the South China Seas.

Paolo Mancosu
History and Philosophy of Logic and Mathematics · University of California, Berkeley · *s*
Funding provided by the Otto Neugebauer Fund

In the last decade, Paolo Mancosu has extensively investigated a variety of topics in the history of logic, the foundations of mathematics, and the philosophy of logic in the period of 1900–40. At the Institute, he will work on *The Adventure of Reason*, a volume to be published by Oxford University Press of papers resulting from this work.

Edward Allen McCord
Chinese History · The George Washington University · *f*
The Starr Foundation East Asian Studies Endowment Fund Member

Edward McCord's project examines the role of militia in state-society relations in China's Republican period. By locating militia within an intermediary space between state and society, he argues that these forces could alternately serve as a base for local power or as a foundation for state-building.

Margaret Dorothea Mehl
History of Japan · University of Copenhagen · *s*
Edward T. Cone Member in Music Studies

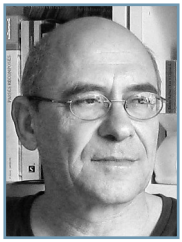
Margaret Mehl is exploring how Western music, particularly art music, was introduced to Japan in the nineteenth and early twentieth centuries, the multiple meanings associated with the violin in the West and in Japan, and the reasons why the violin in Japan, despite occasional experiments, did not ultimately find a place in indigenous music.

Brigitte Leonie Isabelle Meijns
Medieval History · Katholieke Universiteit Leuven and Fund for Scientific Research, Flanders · *v, s*

Brigitte Meijns is examining the metamorphosis of the medieval function of lay advocate of ecclesiastical communities in the West Frankish/French realm, arguing that the study of lay advocacy might lead to a better understanding of the political, religious, and social changes in post-Carolingian and High Medieval society.

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

Members, Visitors, and Research Staff



Eric Olivier Michaud
Historiography of Art · Ecole des Hautes Études en Sciences Sociales, Paris · *s*
Funding provided by the Florence Gould Foundation Fund

Eric Michaud is examining the deep connections between the constructions of art history and the creation of modern nation-states in Europe, which fashioned a nationalistic and racist reception of artistic objects while producing and sustaining a nationalist cult of art.

Kristina Milnor
Classics · Barnard College
Frederick Burkhardt Fellowship funded by The American Council of Learned Societies

Kristina Milnor's study concerns the fragments of textual graffiti that survive on the walls of the Roman city of Pompeii, focusing in particular on those that show the influence of elite Latin literature. She argues that these fragments can provide important insight into the "popular" literary arts of ancient Rome.

David Moon
Russian and East European History · Durham University
Felix Gilbert Member

David Moon is writing a monograph on the interaction between people and the natural environment of the Russian steppes, and changing perceptions of that interaction by natural scientists, farmers, and the Russian authorities, from the early eighteenth to early twentieth centuries.

Samuel Moyn
History · Columbia University
Frederick Burkhardt Fellowship funded by The American Council of Learned Societies

Samuel Moyn is conducting a multinational study of the several levels at which human rights became prominent (in political rhetoric, in intellectual life, and in civil society mobilization) in the 1970s. He will focus on some of the major developments of human rights, including their eventual association with Holocaust memory and with governance by international law.

Angelika Neuwirth
Near Eastern Studies · Freie Universität Berlin · *s*
Agnes Gund and Daniel Shapiro Member

Based on a literary and rhetorical analysis of the suras, Angelika Neuwirth is researching the role of the Qur'an as part of late antique culture, particularly as a document responding to pluricultural theological challenges of the time.

Members, Visitors, and Research Staff

Pantelis Nigdelis
Ancient History, Greek Epigraphy · Aristotle University of Thessaloniki
Funding provided by the Association of Members of the Institute for Advanced Study (AMIAS)

Pantelis Nigdelis is working on an annotated publication of an ephebarch law on an inscription found at Amphipolis, a major city of eastern Macedonia. The inscription is delivered intact (139 lines) and is dated to 23–22 BC, yet goes back to a prototype of the second century BC.

Martti Nissinen
Old Testament Studies, Assyriology · University of Helsinki
William D. Loughlin Member

Martti Nissinen is working on a book-length project on prophecy —that is, human transmission of allegedly divine words by non-technical means—in the ancient eastern Mediterranean cultural sphere. He aims at a full contextualization of biblical prophecy as well as a general treatment of prophecy as a permanent and significant factor in the history of Near Eastern religion and society.

Emmanuel Papoutsakis
Syriac Christianity, Late Antiquity · Princeton University
Ralph E. and Doris M. Hansmann Member

Emmanuel Papoutsakis is pursuing a project on the Syriac homilist and theologian Jacob of Serugh (ca. 451–521). The work involves the edition and translation of Jacob's verse-homily on the Flood, a detailed commentary on the entire homily focusing on literary and exegetical questions, and finally, a historical introduction to Jacob of Serugh and his milieu.

Daniel Thomas Potts
Comparative History, Archaeology, Anthropology · The University of Sydney
Funding provided by the National Endowment for the Humanities and The Andrew W. Mellon Foundation

Daniel Potts is investigating archaeological, epigraphic, and literary evidence of nomadism in the ancient Near East, particularly the historical specificity of nomadic appearances in relation to state-level societies, and seeking to overturn assumptions about the permanence of nomadism in Near Eastern life since the beginnings of domestication (ca. 8000 BC).

Martin J. Powers
History of Chinese Art · University of Michigan
The Gladys Krieble Delmas Foundation Member; additional funding provided by The Andrew W. Mellon Foundation

Martin Powers studies the role of the arts in relation to issues of political action and social justice in China. This year he examines the rhetoric of the "natural" as it developed in China and in England, focusing on the cultural politics informing English accounts of Chinese practice during the eighteenth-century "clash of cultures."

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

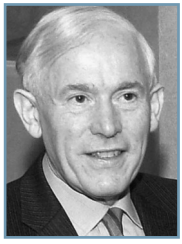
Members, Visitors, and Research Staff

François P. Rigolot
Renaissance Literature · Princeton University · *v*

François Rigolot plans to explore some aspects of the intriguing relationship that developed between magicians and poets in the Renaissance period, an age of remarkable syncretic beliefs. Since his project will cross disciplinary boundaries, he is looking forward to benefiting from the knowledge and reactions of Institute Members and other Visitors.

Sabine Schmidtke
Islamic Studies · Freie Universität Berlin
Gerda Henkel Stiftung Member

Sabine Schmidtke is working on an analysis of the theological doctrines of Abu l-Husayn al-Basri (d. 1045), the founder of what was apparently the last innovative school of Mu`tazilism, and a study of their reception among Muslims, Jews, and Christians. She aims to contribute to the history of shared ideas.



Hamish Marshall Scott
Early Modern History · University of St Andrews
Funding provided by an endowment established with a gift from The Andrew W. Mellon Foundation

Hamish Scott will study the formation of Europe's aristocracy ca. 1350–1750, identifying the social, cultural, and political processes that brought about the emergence of an aristocratic elite across most of Europe during these centuries.

Joanna S. Smith
Art History, Archaeology · Columbia University
Elizabeth and J. Richardson Dilworth Fellow in Historical Studies

A specialist in the art and archaeology of the Mediterranean in the Bronze and Iron ages, Joanna Smith is researching interconnections among cultures from the Aegean to Mesopotamia. Her current book project outlines methods for an art history that seeks to define cross-cultural influence, especially one that depends on archaeological sources of information.

Julia M. H. Smith
Medieval History · University of Glasgow
George William Cottrell, Jr. Member

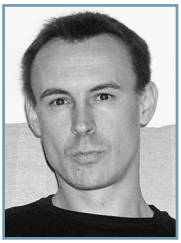
Julia Smith's work uses the medieval reception of early Christian martyr traditions to examine the ways in which late antique discourses of gender and sanctity were reinterpreted ca. 400–1100. She will explore the central role of Roman martyrs in the devotional, imaginative, and political life of the Middle Ages.

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

Members, Visitors, and Research Staff

Lynn Staley
Medieval Studies · Colgate University
Elizabeth and J. Richardson Dilworth Fellow in Historical Studies; additional funding provided by The Andrew W. Mellon Foundation

Lynn Staley is researching the process by which Britain reimagined itself as a secular garden invested with a sacred identity. A reconception of the sacred can be traced in the story of Susanna from the apocryphal Daniel 13 as it was retold by British writers from the early thirteenth century to the seventeenth century.

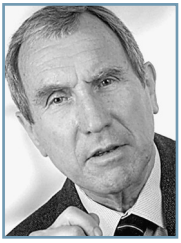


Zoltan Szombathy
Arabic Studies · Eötvös Loránd University
Friends of the Institute for Advanced Study Member

Zoltan Szombathy is examining how the deliberate flouting of dominant norms and values by many individuals in medieval Arabic literature was not only tolerated but highly prized. His project should be, in general terms, an analysis of the coexistence and validity of conflicting value systems within the medieval Arabic urban milieu.

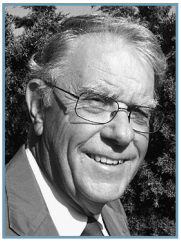
Giovanni Tarantino
Early Modern European History · Monash University
Hans Kohn Member

Giovanni Tarantino plans to study the Scottish political pamphleteer, "independent Whig," and classical scholar Thomas Gordon (d. 1750), particularly Gordon's emphasis on the crucial importance of invigilating the civic morality of men in power and the autonomy of politics from religious or ecclesiastical influence.



Gerhard Thür
Ancient Greek Law · Karl-Franzens-Universität Graz · *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.

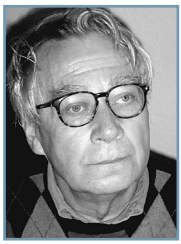


Stephen V. Tracy
Greek History and Epigraphy · The American School of Classical Studies at Athens and The Ohio State University · *v*

Stephen Tracy is currently involved in preparing for the Berlin Academy a new edition of the decrees of Athens and Attica that date to the years 229 to 168 BC. He is also preparing a study of Athenian inscriptions of the early fourth century BC.

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

Members, Visitors, and Research Staff



Erling Johannes von Mende

East Asian History • Technische Universität Berlin

Funding provided by an endowment established with a gift from The Andrew W. Mellon Foundation

The focus—though not exclusively—of Erling von Mende's research will be on the two foreign dynasties Jin and Qing and the opportunities and necessities of multilingualism, language learning, and competence. The languages involved are primarily Chinese, Jurchen, and Manchu, but other languages used in trade and foreign relations will be considered too.

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 was among the School's first Members.

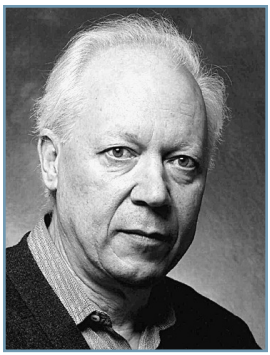
Today, the School is an international center for research in mathematics and computer science. Members discover new mathematical results and broaden their interests through seminars and interactions with the Faculty and with each other. Several central themes in mathematics in the last seventy-five years 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.

During 2008–09, Alice Chang of Princeton University will lead a special program on geometric partial differential equations. The emphasis will be on nonlinear partial differential equations with applications to problems in differential, conformal, and convex geometry.

During the academic year of 2009–10, Professors Enrico Bombieri and Peter Sarnak will lead a program on analytic number theory. Particular topics that will be covered include the distribution of prime numbers, sieves, L-functions, and special sequences, as well as additive and combinatorial methods, exponential sums, spectral analysis, and modular forms.

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.

Faculty



Enrico Bombieri
IBM von Neumann Professor

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.

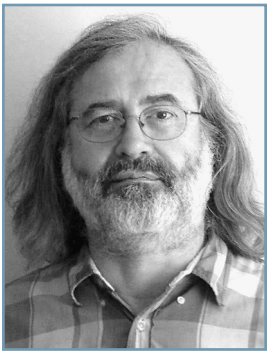
Jean Bourgain
Professor

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 solved longstanding problems in convexity theory and harmonic analysis such as Mahler's conjecture and the lambda-p set problem. His work also 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.

Phillip A. Griffiths
Professor

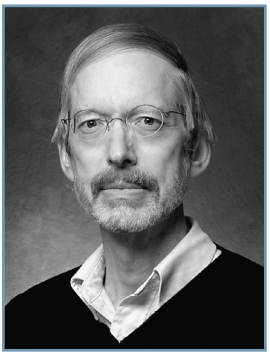
Phillip Griffiths initiated with his collaborators the theory of variation of Hodge structure, which has come to play a central role in many aspects of algebraic geometry and its uses in modern theoretical physics. In addition to algebraic geometry, he has made contributions to differential and integral geometry, geometric function theory, and the geometry of partial differential equations. A former Director of the Institute (1991–2003), Professor 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.

Faculty



Helmut Hofer *(from July 1, 2009)*
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."



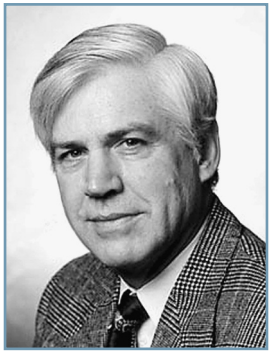
Robert MacPherson
Hermann Weyl Professor

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.

Faculty



Thomas Spencer

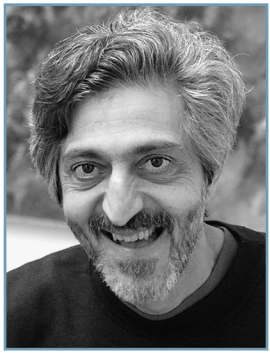
Professor

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. Professor Spencer has also worked on partial differential equations with stochastic coefficients, especially localization theory. He is presently developing a mathematical theory of supersymmetric path integrals to study the quantum dynamics of a particle in random media. His other interests include random matrices, chaotic behavior of dynamical systems, and nonequilibrium theories of turbulence.

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. One consequence of his work is the solution of the Milnor Conjecture. Currently, he is interested in categorical probability theory, mathematical population genetics, and automated proof verification. He is working on a new approach to formalization of mathematics based on homotopy lambda calculus. His other interests include wildlife photography and trance music.

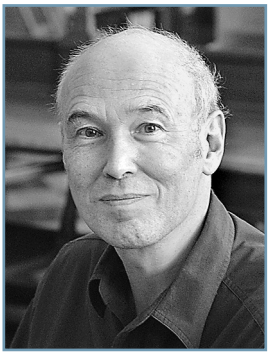


Avi Wigderson

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)?

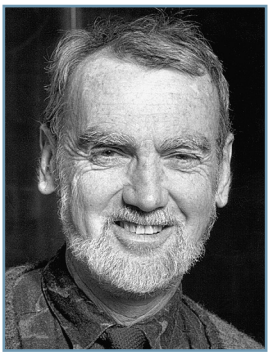
Faculty



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.



Robert P. Langlands

Professor Emeritus

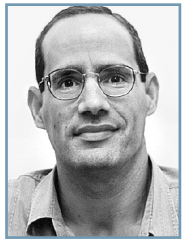
Robert Langlands's profound insights in number theory and representation theory include the formulation of general principles relating automorphic forms and algebraic number theory; the introduction of a general class of L-functions; the construction of a general theory of Eisenstein series; the introduction 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, himself, has spent some of his time in recent years studying lattice models of statistical physics and the attendant conformal invariance.

Members and Visitors

Adi Akavia

Complexity, Coding Theory · Rutgers, The State University of New Jersey · *v*

Adi Akavia is studying problems in cryptography, error correcting codes, and complexity.



Noga Alon

Combinatorics · Tel Aviv University · *vp, f*

Funding provided by The Ambrose Monell Foundation and the National Science Foundation

Noga Alon will work on questions in discrete mathematics and theoretical computer science, focusing on problems in extremal and probabilistic combinatorics, information theory, combinatorial number theory, and discrete probability. He expects to combine combinatorial tools with algebraic and probabilistic techniques.

John Arthur Baldwin

Knot Theory, Low-dimensional Topology · Columbia University · *vri*

At the Institute, John Baldwin plans to continue a study of contact and symplectic geometry through the lens of Heegaard Floer homology. He also plans to investigate new connections between Khovanov(-Rozansky) homology and Heegaard Floer homology, especially as they pertain to the study of Legendrian and transverse links.

Dmitriy Bilyk

Analysis · Georgia Institute of Technology

Funding provided by the National Science Foundation

Dmitriy Bilyk is interested in harmonic analysis and its applications to other areas, in particular the discrepancy theory. Bilyk is planning to continue the development of analytic techniques that have recently led to progress on the lower bounds for discrepancy in higher dimensions.

Thierry Jacques Bodineau

Probability, Mathematical Physics · École Normale Supérieure, Paris · *s*

Funding provided by the Florence Gould Foundation Fund

Thierry Bodineau will work on problems in probability and mathematical physics. He plans to analyze, by means of hydrodynamic limit theory, models from nonequilibrium statistical mechanics as well as fluctuation theorems for driven and disordered stochastic dynamics.

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

Members and Visitors

Luis Caffarelli
Nonlinear Problems in Analysis and Applied Mathematics · The University of Texas at Austin · *s*
Funding provided by The Ambrose Monell Foundation

Luis Caffarelli's interests concern regularity and stability of phase transitions, regularity and decay in fluid dynamics problems, periodic and random homogenization in material science and optimal control, and optimal transportation. He will participate in the special program on geometry and partial differential equations.

Alice Chang
Geometric Analysis, Partial Differential Equations · Princeton University · *dvp*
Funding provided by the Minerva Research Foundation and The Charles Simonyi Endowment

Alice Chang's research concentrates on using methods in partial differential equations to study problems in geometry, in particular in conformal geometry. Currently, she is studying conformal invariants of high orders and classification results of manifolds according to the sign and size of conformal invariants.

Sagun Chanillo
Analysis, Partial Differential Equations · Rutgers, The State University of New Jersey · *f*

Sagun Chanillo will be studying free boundary problems associated with composite materials and also geometric problems by variational methods. Another focus area is on problems related to CR Geometry.

Arkadev Chattopadhyay
Computational Complexity, Discrete Mathematics · McGill University
Funding provided by the National Science Foundation

Arkadev Chattopadhyay plans to continue with his work on circuit and communication complexity in addition to studying quantum computation, pseudorandom generators, and the emerging connections between additive combinatorics and theoretical computer science.

Pierre-Henri Chaudouard
Automorphic Forms · CNRS and Université Paris-Sud 11 · *vnf, f*
Funding provided by the National Science Foundation

Pierre-Henri Chaudouard is currently working on the weighted fundamental lemma of Arthur. It is a generalization of the Langlands-Shelstad fundamental lemma that is needed for the stabilization of the trace formula.

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

Members and Visitors

Szu-yu Sophie Chen
Differential Geometry, Nonlinear Partial Differential Equations · University of California, Berkeley
Funding provided by the National Science Foundation

Szu-yu Chen works on nonlinear partial differential equations, conformal geometry, and complete manifolds in general relativity. Her current research interests focus on local and global behaviors of nonlinear systems and their applications in differential geometry.

Xi Chen
Game Theory, Complexity Theory · Princeton University · *v*

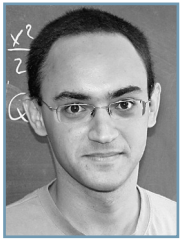
Xi Chen continues his study in complexity theory, especially in searching for ways to characterize the computational complexity of natural problems.

Agnès Desolneux
Image Analysis · CNRS and Université Paris Descartes · *f*
Funding provided by the National Science Foundation

Agnès Desolneux is working on stochastic methods for image analysis and image understanding. She is also interested in models from percolation theory.

Hongjie Dong
Applied Mathematics · Brown University · *f*
Funding provided by the National Science Foundation

Hongjie Dong's main research interest involves both partial differential equations and probability theory, more specifically, fully nonlinear elliptic and parabolic equations, probability approach of partial differential equations, stochastic partial differential equations, and equations from fluid mechanics.



Zeev Dvir
Computer Science · Weizmann Institute of Science
Funding provided by the National Science Foundation

Zeev Dvir is interested in many problems related to computational complexity with an emphasis on derandomization and algebraic methods.

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

Members and Visitors

Hao Fang
Differential Geometry · The University of Iowa · *s*
Funding provided by the National Science Foundation

Hao Fang is working on geometric analysis problems related to conformal geometry. He is also interested in the study of analytic torsion and its applications to moduli problems.

Laurent Fargues
Langlands Program, Shimura Varieties, P-Divisible Groups · CNRS and Université Paris-Sud 11 · *vnf, f*

Laurent Fargues will study the p-adic geometry of Shimura varieties and moduli spaces of p-divisible groups for the purpose of developing a theory of p-adic automorphic forms on PEL type Shimura varieties generalizing Katz theory for modular curves.

Irene Gamba
Mathematical and Statistical Physics, Nonlinear Theory, Applied and Computational Mathematics · The University of Texas at Austin · *s*

Irene Gamba works on nonlinear analysis for statistical methods from semiclassical and kinetic transport; nonlinear partial differential equation theory; applications to nonequilibrium statistical theory; deterministic numerical schemes to transients for nonlinear Boltzmann-type problems; and simulations of rarefied gases, rapid granular flows, and transients for hot-carrier kinetic transport in nanodevice modeling.

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

Jayce Getz will investigate the arithmetic and geometry of cycles on Shimura varieties. Particular attention will be paid to the relationship of such cycles to functorial transfer in the theory of automorphic representations.

Maria del Mar Gonzalez
Differential Geometry, Partial Differential Equations · Universitat Politècnica de Catalunya · *s*
Funding provided by the National Science Foundation

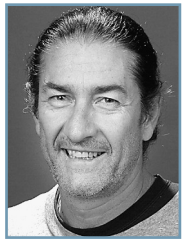
Maria del Mar Gonzalez is interested in the relation between fractional order, nonlocal operators, and conformal geometry. The basic example is the fractional Laplacian, which appears when studying the scattering operator of some special manifolds.

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

Members and Visitors

Mark Goresky
Geometry, Automorphic Forms · Institute for Advanced Study
Funding provided by the Association of Members of the Institute for Advanced Study (AMIAS) and The Ambrose Monell Foundation

Mark Goresky's main interest this year concerns the generation of pseudorandom sequences for use in cryptography and spread-spectrum communications. He plans to complete the first draft of his book, *Algebraic Shift Register Sequences*, written jointly with Andrew Klapper.



Ashwin Rod Gover
Differential Geometry · The University of Auckland · *f*

Ashwin Gover plans to study certain classes of geometric elliptic differential complexes. In particular, he is interested in issues of existence and construction, links to prolonged differential systems, and applications to the construction and study of global invariants.

C. Robin Graham
Differential Geometry, Geometric Analysis · University of Washington · *s*

At the Institute, Robin Graham will work on topics centered around conformal geometry as part of the program in geometric partial differential equations. He is particularly interested in relationships between conformal geometry and analysis and geometry on asymptotically hyperbolic manifolds.

Colin Guillarmou
Geometric Analysis · CNRS and Université de Nice Sophia Antipolis · *s*
Funding provided by the National Science Foundation

Colin Guillarmou plans to study partial differential equations related to conformal geometry and AdS/CFT. He also wants to pursue some work on spectral theory of infinite volume hyperbolic manifolds and relations with dynamical zeta functions, in particular three-dimensional cases.

Matthew Gursky
Geometric Analysis · University of Notre Dame
Friends of the Institute for Advanced Study Member; additional funding provided by The Charles Simonyi Endowment

Matthew Gursky plans to study variational problems from mathematical physics and spectral theory, conformal invariants of Riemannian manifolds and their geometric applications, and the existence and regularity theory of solutions to some fully nonlinear equations that arise in geometry.

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

Members and Visitors

Fengbo Hang
Analysis · Courant Institute of Mathematical Sciences, New York University · *f*
Funding provided by the National Science Foundation

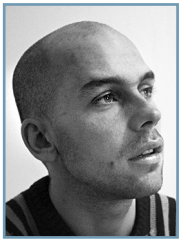
Fengbo Hang will study rigidity results for manifolds with non-negative curvature and mathematical problems related to Faddeev-Skyrme models in mathematical physics.

Kengo Hirachi
Differential Geometry, Complex Analysis · The University of Tokyo · *s*
Funding provided by the National Science Foundation

Kengo Hirachi has been studying the ambient space associated with conformal and CR manifolds. At the institute, he plans to construct the ambient lift of Bernstein-Gelfand-Gelfand sequences of invariant differential operators on these manifolds, with a view to the application to the classification of local invariants.

Michael Hochman
Dynamical Systems · Institute for Advanced Study and Princeton University · *vri*
Funding provided by the National Science Foundation

Michael Hochman's research interests include ergodic theory, topological dynamics, and their applications to information theory and symbolic dynamics. He is currently working on descriptive and information-theoretic aspects of the dynamics of multidimensional symbolic systems.



Pavel Hrubes
Computer Science · Mathematical Institute, Academy of Sciences of the Czech Republic, Prague
Funding provided by the National Science Foundation

Pavel Hrubes's research concerns complexity of propositional and algebraic proof systems, the ideal targets being Frege and extended Frege systems, and algebraic circuit complexity.

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

Atsushi Ichino is working on the following problem in the theory of automorphic forms and representation theory: the relation between periods of automorphic forms and special values of automorphic L-functions.

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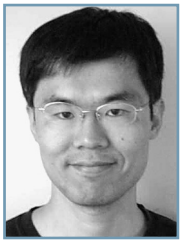
Members and Visitors

Russell Impagliazzo
Computational Complexity · University of California, San Diego, and Institute for Advanced Study · *vp*
Funding provided by The Ellentuck Fund

Russell Impagliazzo specializes in computational complexity, the role of randomness in computation, proof complexity, average-case complexity, the foundations of cryptography, and the exact complexity of NP-complete problems.

Keiko Kawamuro
Low-dimensional Topology · Rice University · *s*
Funding provided by the National Science Foundation

Keiko Kawamuro's research focuses on classification of transverse knots in contact three-dimensional manifolds via geometric braid theory and contact surgeries. She hopes to understand the connection between transversely nonsimple knots and knots admitting negative flype braid moves.



Young-Heon Kim
Differential Geometry, Partial Differential Equations · The University of British Columbia
Funding provided by the National Science Foundation

Young-Heon Kim plans to work on regularity of optimal transport maps. This is related to Riemannian geometry as well as the study of fully nonlinear equations of Monge-Ampere type.

Bruno Klingler
Arithmetic Groups, Algebraic Geometry · Institut de Mathématiques de Jussieu, Université Paris Diderot · *vnf*
Funding provided by the National Science Foundation

During his stay at the Institute, Bruno Klingler plans to work on Kahler groups, non-Abelian Hodge theory, and some related questions in automorphic forms.

Elena Kosygina
Stochastic Processes in Random Media · Baruch College and The Graduate Center, The City University of New York · *s*
Funding provided by the National Science Foundation

Elena Kosygina's current research concerns Lyapounov exponents of the Green's function for diffusions and random walks in a random potential. She is also planning to work on homogenization of stochastic Hamilton-Jacobi-Bellman equations with a non-convex Hamiltonian.

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Members and Visitors

Dieter Kotschick

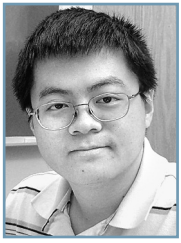
Geometry and Topology · Ludwig-Maximilians-Universität München
Funding provided by The Bell Companies Fellowship

Dieter Kotschick will continue his work on the topology of smooth manifolds, using methods from geometry, analysis, and dynamical systems. He also expects to work on coarse topology and relations with geometric group theory.

Gabor Kun

Discrete Mathematics, Computer Science, Number Theory · Alfréd Rényi Institute of Mathematics, Hungarian Academy of Sciences, Budapest
Funding provided by the National Science Foundation

Gabor Kun's research primarily focuses on probabilistic methods in combinatorics and the application of pseudorandomness in computer science and additive number theory. He plans to work with Visiting Professor Noga Alon and Professor Avi Wigderson.



Kai-Wen Lan

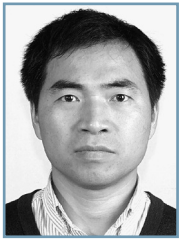
Number Theory, Shimura Varieties · Harvard University · *vri*

Kai-Wen Lan plans to study cohomologies of Shimura varieties and related locally symmetric spaces with methods related to arithmetic toroidal compactifications. One of his aims is to understand relations between automorphic forms coming from geometric objects of very different natures.

Dong Li

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

At the Institute, Dong Li will work on interrelated problems in molecular dynamics, mathematical physics, and fluid dynamics.



Xinan Ma

Applied Mathematics · University of Science and Technology of China
Zurich Financial Services Member, with funding provided by the National Science Foundation

Xinan Ma is working on fully nonlinear elliptic partial differential equation theory and its geometry applications, for example, Monge-Ampere equations, Hessian equation, and its relation to convex bodies geometry.

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vnf von Neumann Fellowship

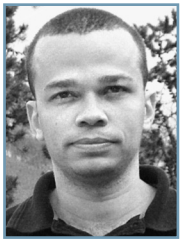
Members and Visitors

Andrea Malchiodi

Geometric Partial Differential Equations · Scuola Internazionale Superiore di Studi Avanzati, Trieste, Italy · *f*

Funding provided by The Giorgio and Elena Petronio Fellowship Fund

The main interest of Andrea Malchiodi's research is geometric analysis, in particular problems with variational structure. At the Institute, he plans to work on finding canonical metrics on compact manifolds with topological methods, and to study their relation with the existing geometric structure.



Fernando Coda Marques

Differential Geometry · Instituto Nacional de Matemática Pura e Aplicada, Rio de Janiero · *f*

Funding provided by the National Science Foundation

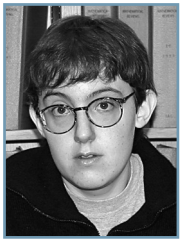
Fernando Marques is interested in geometric questions that are naturally associated with the study of partial differential equations. He intends to study the qualitative properties of solutions to natural variational problems arising in conformal geometry, particularly in high dimensions.

Emanuel Milman

Asymptotic Geometric Analysis, Convex Geometry · Institute for Advanced Study

Funding provided by the National Science Foundation

During Emanuel Milman's stay at the Institute, he plans to investigate various volumetric properties of domains in the presence of convexity (e.g. convex domains in manifolds with non-negative Ricci curvature), such as spectral properties of the Neumann and Dirichlet Laplacians and other isoperimetric and concentration inequalities.



Sophie Morel

Shimura Varieties · Institute for Advanced Study

Funding provided by the Clay Mathematics Institute and the National Science Foundation

Sophie Morel is studying the automorphic representations appearing in the intersection cohomology of the Baily-Borel compactification of Shimura varieties. One of her main tools will be Arthur's stable trace formula.

Hadar Dana Moshkovitz

Derandomization, Coding Theory · Princeton University · *v*

Dana Moshkovitz's research is in theoretical computer science. She is working on problems concerning probabilistically checkable proofs, randomness and pseudorandomness, and coding theory.

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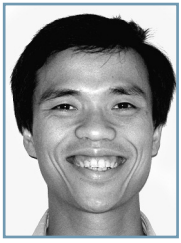
Members and Visitors

Arvind Nair
Lie Groups, Representation Theory · Tata Institute for Fundamental Research, Mumbai, India · *f*

During his stay at the Institute, Arvind Nair plans to work on the geometry of Shimura varieties and their compactifications, in particular on questions arising from the relation of their cohomology to automorphic forms and representation theory.

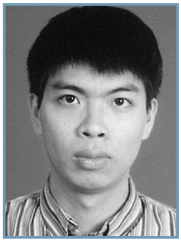
Bao Châu Ngô
Algebraic Geometry, Group Theory · Institute for Advanced Study
Funding provided by The Oswald Veblen Fund

Bao Châu Ngô is working on a still conjectural geometric trace formula. This program is an attempt to bring the Arthur-Selberg trace formula into the framework of the geometric Langlands program.



Hoai-Minh Nguyen
Applied Mathematics · Rutgers, The State University of New Jersey
Funding provided by the National Science Foundation

Hoai-Minh Nguyen's research interests include nonlinear partial differential equations, nonlinear functional analysis, geometric measure theory, and numerical analysis. He plans to understand and study some problems in geometric partial differential equations.



Tu Nguyen
Analysis · The University of Chicago
Funding provided by the National Science Foundation

Ted Nguyen plans to work on unique continuation, inverse problems, and spectra of elliptic operators with periodic coefficients.

Kate Okikiolu
Spectral Geometry, Geometric Analysis · University of California, San Diego · *f*

Kate Okikiolu is studying the spectral geometry of compact Riemannian manifolds, particularly the behavior of the spectral zeta function associated to an elliptic partial differential operator. Her aim is to develop the general theory and to understand cases of particular physical or geometrical relevance such as the functional determinant and the total wavelength.

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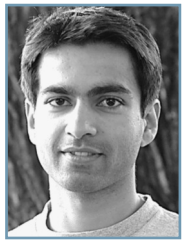
Members and Visitors

Ania Otwinowska
Algebraic Cycles and Hodge Theory · Université Paris-Sud 11
Funding provided by The Giorgio and Elena Petronio Fellowship Fund

Ania Otwinowska is planning to work on variational Hodge theory and to continue her investigation of Voevodsky motives.

Jie Qing
Conformal Geometry and Conformally Invariant Partial Differential Equations · University of California, Santa Cruz

Jie Qing is interested in nonlinear analysis, harmonic analysis, and partial differential equations (systems) with applications to differential geometry, complex geometry, and mathematical physics. His research concerns singular behavior of harmonic maps and heat flow for harmonic maps, as well as the Ginzburg-Landau problem and the geometry of conformally covariant differential operators on 4-manifolds.



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

During Anup Rao's stay at the Institute, he plans to seek answers to various questions in computational complexity. He is particularly interested in the construction of randomness extractors and in the design of pseudorandom objects.

Alan Reid
Hyperbolic Manifolds, Discrete Groups, Low-dimensional Topology · The University of Texas at Austin · *f*

Alan Reid studies the geometry and topology of hyperbolic manifolds, mainly in dimension 3. Much of his research is motivated by conjectures about the topology of finite sheeted covers of hyperbolic 3-manifolds. His research on arithmetic hyperbolic manifolds connects with number theory and automorphic forms.

Zeev Rudnick
Number Theory · Tel Aviv University

Zeev Rudnick works on various topics in number theory, mostly analytic number theory and automorphic forms, and in mathematical physics, specifically quantum chaos. Among his current projects are the statistics of zeros of zeta functions of varieties defined over a finite field, and equidistribution problems on locally symmetric spaces.

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Members and Visitors

Alireza Salehi Golsefidy

Semisimple Lie Groups · Princeton University and Institute for Advanced Study · *vri*

Alireza Salehi Golsefidy is working on various topics centering at semisimple Lie groups, such as homogeneous dynamical system, its application in number theory, action of discrete subgroups on the Bruhat-Tits building, and the lattices of minimum covolume in various semisimple Lie groups.

Mamadou Sango

Stochastic Partial Differential Equations, Geometric Analysis · University of Pretoria · *s*

Funding provided by the National Science Foundation

The current research of Mamadou Sango deals with some mathematical problems arising in stochastic models of fluids (homogenization, existence of solutions, etc.) and with geometric analysis (anisotropic harmonic maps).

Shuanglin Shao

Analysis · University of California, Los Angeles

Funding provided by the National Science Foundation

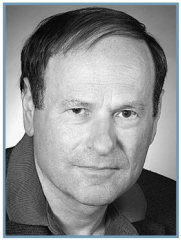
Shuanglin Shao works in harmonic analysis and partial differential equations. He is interested in establishing the profile decomposition result for the Airy equation, and the problem of pointwise convergence of solutions to the Schrödinger equation.

Sug Woo Shin

Number Theory, Shimura Varieties · Institute for Advanced Study · *f*

Funding provided by the National Science Foundation

Sug Woo Shin would like to investigate the Langlands correspondence as realized in the cohomology of Shimura varieties (global) or Rapoport-Zink spaces (local). The techniques will range from arithmetic geometry to the trace formula and endoscopy.



Israel Michael Sigal

Mathematical Physics, Applied Mathematics · University of Toronto

Israel Sigal will continue his work in partial differential equations of quantum physics (Schrödinger equation, linear and nonlinear, Yang-Mills equations, Ginzburg-Landau equation), nonrelativistic QED, nonequilibrium statistical mechanics, mean-curvature flow, and reaction-diffusion equations of biology.

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Members and Visitors

Craig Valere Spencer
Number Theory · Kansas State University
Funding provided by the National Science Foundation

Craig Spencer is primarily interested in applications of the circle method. During his stay at the Institute, he will use the circle method to study Diophantine inequalities, the Manin conjecture, and arithmetic combinatorics.

Nicolas Templier
Analytic Number Theory · Université Montpellier 2
Funding provided by the National Science Foundation

Nicolas Templier is aiming to pursue the interplay between sums of exponential sums, distribution of integral points on (pre)homogeneous spaces, trace formulas, and critical values of complex/p-adic L-functions.

Yichao Tian
Arithmetic Algebraic Geometry · Université Paris 13 · *vri*
Funding provided by the National Science Foundation

Yichao Tian is currently interested in the integral p-adic Hodge theory and ramification theory, and he plans to study the relation between Kisin's S-modules and the canonical filtration for finite and flat group schemes over a discrete valuation ring.

Neil Trudinger
Nonlinear Elliptic Partial Differential Equations · The Australian National University · *f*
Funding provided by the James D. Wolfensohn Fund

Neil Trudinger's research area is nonlinear elliptic partial differential equations and their applications. Recent areas of application include affine and conformal geometry and optimal transportation. He will be working in these areas at the Institute with a goal of completing some ongoing projects.

Corinna Ulcigrai
Dynamical Systems, Ergodic Theory · University of Bristol · *s*
Funding provided by the National Science Foundation

During her stay at the Institute, Corinna Ulcigrai will work on problems interrelating ergodic theory, number theory, and geometry. Her current research interests are in dynamical systems, in particular spectral theory of interval exchange transformations and dynamics in Teichmüller spaces.

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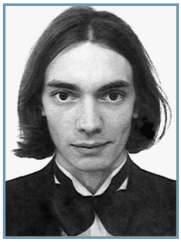
Members and Visitors

Virginia Vassilevska
Theoretical Computer Science · Carnegie Mellon University
Funding provided by the National Science Foundation

Virginia Vassilevska is interested broadly in theoretical computer science. At the Institute, she plans to focus on a variety of problems in graph algorithms.



Cédric Villani
Kinetic Theory · École Normale Supérieure de Lyon · *s*
Funding provided by The Giorgio and Elena Petronio Fellowship Fund

Cédric Villani does research in partial differential equations, statistical mechanics, probability, and Riemannian geometry, with particular emphasis on two subjects: kinetic theory and optimal transport.

Lihe Wang
Regularity of Partial Differential Equations · The University of Iowa · *s*

Lihe Wang's research interests include partial differential equations and their applications in geometry and physics, qualitative properties such as regularity and stability, the dynamics of surface flows and their applications, and mathematical finance.

Andrew Wiles
Algebraic Number Theory · Princeton University · *v*

Andrew Wiles is working primarily on two projects at the moment. The first concerns the solvability of equations in more than one variable. In one variable Abel proved that most equations are not solvable, but the corresponding result in more than one variable is unknown. The second is a long-term project to understand the problem of functoriality in Langlands's theory of automorphic representations.

Richard Ryan Williams
Theoretical Computer Science · Carnegie Mellon University
Funding provided by the National Science Foundation

Many computational problems seem to require exhaustive search, the examination of every possible candidate solution, in order to solve them. Richard Williams will work on discovering more efficient algorithms for such problems, as well as new limitations on how well algorithms can solve these difficult problems.

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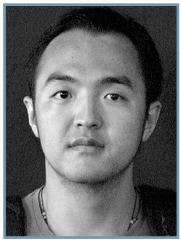
Members and Visitors

Qingyu Wu

Automorphic Forms and Representation Theory · Purdue University

Funding provided by the S. S. Chern Foundation for Mathematics Research Fund and the National Science Foundation

Qingyu Wu is studying geometric Langlands correspondence and investigating the possibility of characterizing the image of the functorial transfer from GL(2)XGL(3) to GL(6) over function field.



Chenyang Xu

Algebraic Geometry · Princeton University · *f*

Funding provided by the National Science Foundation

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

Yongzhong Xu

Partial Differential Equations, Differential Geometry, Contact Geometry · Michigan State University

Funding provided by the National Science Foundation

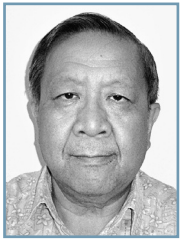
Yongzhong Xu is interested in nonlinear partial differential equations arising in geometry and contact geometry via legendrian curves and critical points at infinity approach. At the Institute, she plans to continue her work in these two directions.

Xiaodong Yan

Applied Mathematics · University of Connecticut · *f*

Funding provided by the National Science Foundation

Xiaodong Yan works on questions in partial differential equations. She will work on Liouville properties for Lane-Emden systems and related integral systems, as well as infinite Prandtl number heat convections.



Paul Yang

Extremal Metrics on 3 and 4 Manifolds · Princeton University

Paul Yang plans to work in collaboration with Alice Chang and Sophie Chen on the question of existence of Poincaré-Einstein metrics in 3+1 dimensions, and in collaboration with Andrea Malchiodi and Jih-Hsin Cheng on the notion of mass in CR geometry and its relation with the conformally covariant operators.

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Members and Visitors

Amir Yehudayoff
Computer Science, Discrete Mathematics · Weizmann Institute of Science
Funding provided by the National Science Foundation

Amir Yehudayoff's main area of research is computational complexity theory. Specifically, he is interested in understanding and proving lower bounds for different computational models, such as restricted arithmetic circuits.

Xinyi Yuan
Number Theory · Columbia University
Funding provided by the Clay Mathematics Institute

Xinyi Yuan is interested in algebraic cycles, arithmetic intersection theory, and automorphic forms. He pays special attention to the relation between derivatives of L-functions and height pairing of certain cycles.

Yu Yuan
Partial Differential Equations, Differential Geometry · University of Washington · *s*
Funding provided by the National Science Foundation

Yu Yuan is studying the existence and regularity of solutions to fully nonlinear equations such as special Lagrangian equations, Monge-Ampere equations, and Isaacs equations.

Xiaoyi Zhang
Nonlinear Equations, Harmonic Analysis · Institute for Advanced Study · *vnf*
Funding provided by the National Science Foundation

During Xiaoyi Zhang's stay at the Institute, she will mainly work on the wellposedness, the scattering theory, and the blow-up properties of nonlinear Schrödinger equations.

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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

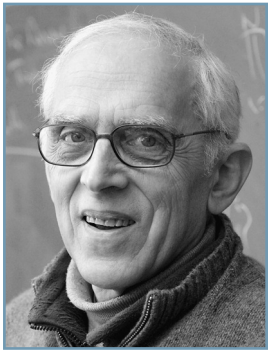
The School of Natural Sciences, established in 1966, provides a unique atmosphere for research in broad areas of theoretical physics, astronomy, and systems biology.

Areas of current interest in theoretical physics include elementary particle physics, particle phenomenology, string theory, and quantum theory and quantum gravity and their relationship to geometry. The astrophysics group combines theory with modern observational studies to understand a wide variety of astrophysical phenomena. The research in mathematical physics and string theory benefits from a strong synergistic activity involving collaborations with the School of Mathematics. The programs in physics and astronomy are closely integrated with the corresponding activities at Princeton University via joint seminars and lunches, as well as frequent informal contacts.

The Simons Center for Systems Biology takes an interdisciplinary approach to biology, conducting research at the interface of molecular biology and the physical sciences and drawing researchers from an array of disciplines, including mathematics, physics, astrophysics, molecular biology, and chemistry. The Center encourages collaborations with other academic and clinical groups as well as with research scientists from pharmaceutical, biotechnology, and computer companies, to pool biological data and to confirm theoretical models. The Center hosts a variety of joint "lab meetings," seminars, symposia, and public lectures that take place during the year.

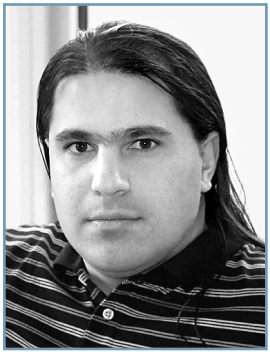
The School also sponsors Prospects in Theoretical Physics, a two-week residential summer program held at the Institute for promising graduate students, who attend lectures and sessions on the latest advances and open questions in the field of theoretical physics.

Faculty



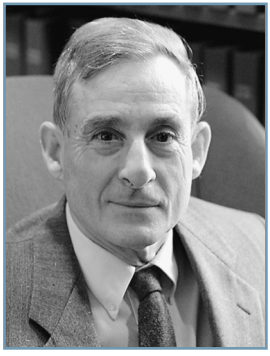
Stephen L. Adler
Professor · Particle Physics

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.



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.



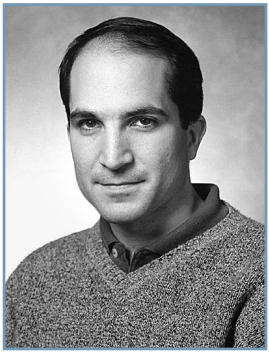
Peter Goldreich
Professor · Astrophysics

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 fluidsa, and planet formation. His current research is focused on the production of impact spherules.

Faculty

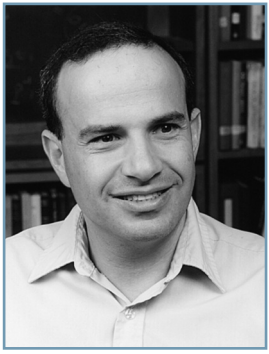
Arnold J. Levine
Professor · Biology

Arnold Levine is a widely acclaimed leader in cancer research. In 1979, Professor 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.



Juan Maldacena
Professor · Theoretical Physics

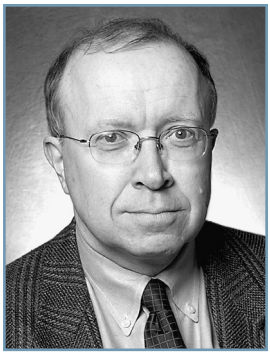
Juan Maldacena's work focuses on quantum gravity, string theory, and quantum field theory. He has proposed a relationship between quantum gravity and quantum field theories that elucidates various aspects of both theories. He is studying this relationship further in order to understand the deep connection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



Nathan Seiberg
Professor · Mathematical Physics

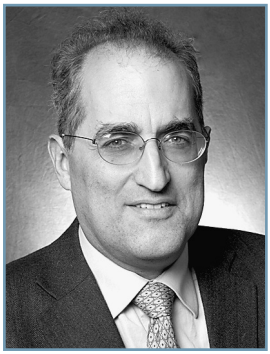
Nathan Seiberg's work focuses on various aspects of string theory, field theory, and particle physics. In recent years he has found with various collaborators exact solutions of supersymmetric quantum field theories and string theories. These solutions have applications to mathematics and to the dynamics of quantum field theories and string theory, leading to many new and unexpected insights, one of which is the fundamental role played by the "duality" between electricity and magnetism in these theories.

Faculty



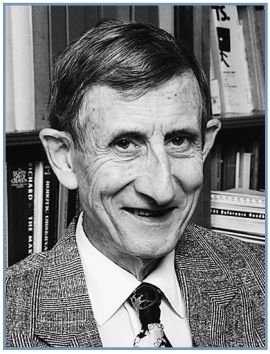
Scott Tremaine
Richard Black Professor · Astrophysics

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



Edward Witten
Charles Simonyi Professor · Mathematical Physics

Edward Witten's work exhibits a unique combination of mathematical power and physics insight, and his contributions have greatly enriched both fields. He is largely responsible for 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.



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 current research tries to answer the question of whether any conceivable thought-experiment could detect a single graviton.

Members and Visitors

Prashanth AK
Biology · Institute for Advanced Study
Lynn and Robert Johnston Founders' Circle Member

Prashanth AK's research program aims to elucidate general principles underlying complex behavior of biological systems. He focuses on how DNA structural properties (specifically, destabilization of the DNA duplex) determine fundamental biological mechanisms, by examining the interaction of such properties with other biological features to mediate biological system-level behavior.

Luis Fernando Alday
Particle Physics · Utrecht University
Funding provided by the United States Department of Energy

Luis Alday is mainly interested in topics related to the string/gauge theory correspondence. By means of the correspondence, he is planning to gain a better understanding of gauge theory scattering amplitudes as well as gravitational objects, such as black holes.

Vladimir Belyi
Biology · Institute for Advanced Study

Vladimir Belyi is interested in the study of genome evolution, structure-sequence relation, and optimization of genomic code. While at the Institute, he will be working on combining tools of statistical mechanics and comparative genomics to test for novel gene functions, look for pressures associated with genetic drift, and study evolution of the transcriptional regulation.

Gyan Bhanot
Biology · Rutgers, The State University of New Jersey, and The Cancer Institute of New Jersey · *v*

Gyan Bhanot's research concerns computational biology related to cancer. He uses microarray, mass spectrometry, and SNP polymorphism data to identify, quantify, and explain cancer initiation, progression, and metastasis. He also works in evolutionary genetics, including human migration, phylogeny, disease association studies, and patterns of mutations correlated with longevity and complex disease phenotypes.

N. Emil J. Bjerrum-Bohr
Mathematical and Particle Physics · Institute for Advanced Study
Funding provided by the United States Department of Energy

N. Emil J. Bjerrum-Bohr is investigating the recent conjecture of supersymmetric Yang-Mills as a topological string theory in twistor space, and he is continuing his computations of amplitudes relevant to understanding the physics and phenomenology in and beyond the Standard Model as well as in quantum gravity.

Members and Visitors

Chang Chan
Biology · Institute for Advanced Study
Charles L. Brown Member

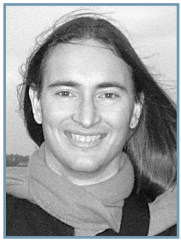
Chang Chan is interested in the use of mathematics to analyze large datasets toward the goal of understanding the genetics of human diseases. Two diseases he is focusing on are autism and cancer. He is also interested in the regulation of microRNAs and the role they play in diseases.

Shane Davis
Astrophysics · Institute for Advanced Study
Chandra Postdoctoral Fellow

While at the Institute, Shane Davis plans to work on a broad list of problems within the field of astrophysics, with a continuing emphasis on high-energy phenomenon. This includes the study of accreting black hole systems and the nature of their emission mechanisms.

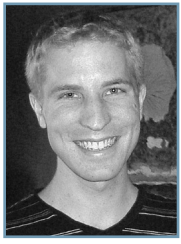
Henriette Elvang
Theoretical Physics · Massachusetts Institute of Technology
Funding provided by the National Science Foundation

Henriette Elvang works in theoretical physics, in particular gravity and quantum field theory. At the Institute, she is interested in continuing her current work on black holes, supersymmetric gauge theories, and supergravity, while also broadening into new areas of research.



Davide Gaiotto
Particle Physics · Institute for Advanced Study · *m*
Funding provided by the United States Department of Energy; Roger Dashen Member

The semiclassical description of black holes in quantum gravity predicts some surprising facts and some sharp contradictions. String theory potentially provides a detailed explanation of both. At the Institute, Davide Gaiotto will continue his work on black hole physics and join the investigations of the surprising connections to field theory.



Peter Graham
Particle Physics · Stanford University · *v, f*
Funding provided by the National Science Foundation

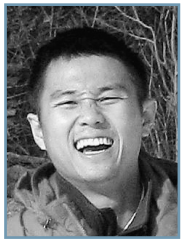
Peter Graham's research interests include a theoretical understanding of physics beyond the Standard Model and novel experimental proposals for probing particle physics, gravity, and cosmology. Currently, he is focused on open questions such as the origin of fermion masses and the nature of dark matter.

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

Members and Visitors

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

Benjamin Greenbaum will be working on patterns in the evolution of viruses and how those patterns relate to host biology. Specifically, he is interested in using viruses to better understand the innate immune system.



Kevin Heng
Astrophysics · Institute for Advanced Study

Kevin Heng's research interests involve the physics of shocks and dust, applied to supernovas, supernova remnants, and gamma-ray bursts. Interested in the interfaces between atomic physics and astrophysics, he is focused on theoretical endeavors and phenomenological ones, while retaining a long-term (and currently amateur) interest in the philosophy of science.

Mario Juric
Astrophysics · Institute for Advanced Study
Funding provided by the National Aeronautics and Space Administration, National Science Foundation

Mario Juric's current area of research is the dynamics of few-body systems. During his stay at the Institute, he will numerically investigate the long-term evolution of planetary systems with the goal of understanding and explaining the observed properties of extrasolar planets.

Charles R. Keeton
Astrophysics · Rutgers, The State University of New Jersey · *f*

Charles Keeton uses strong gravitational lensing to study diverse topics in astrophysics and cosmology. At the Institute, he will focus on using multiply-imaged quasars to probe the small-scale distribution of dark matter in galaxies and on critically assessing the biases and uncertainties in lensing astrophysics.

Hyung Do Kim
Particle Physics · Seoul National University · *s*

Hyung Do Kim is working on particle physics phenomenology and cosmology. He is mainly interested in the connection of electroweak symmetry breaking and supersymmetry breaking in light of the Large Hadron Collider, which starts running this year. He will work on supersymmetry model building and collider physics during his stay at the Institute.

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

Members and Visitors

Bence Kocsis
Astrophysics · Harvard University

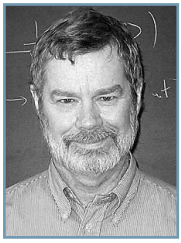
At the Institute, Bence Kocsis will study astrophysical general relativity, focusing on black holes, sources of gravitational waves, and the structure of accretion disks and dense star clusters around black hole binaries. He is also interested in observational aspects related to the detection of gravitational waves.

Zohar Komargodski
String Theory and Supersymmetry, Phenomenology · Weizmann Institute of Science
Funding provided by the National Science Foundation

Zohar Komargodski's research concerns quantum field theories. He is interested in their connection to string theory and to particle physics phenomenology. In particular, he intends to work on supersymmetry and its breaking.

Michael Kuhlen
Astrophysics · Institute for Advanced Study
William L. Loughlin Member

Michael Kuhlen continues to investigate the formation of structure in the universe, using analytical methods as well as large-scale numerical simulations. In particular, he is interested in the dark matter substructure of our galaxy, the formation of the first luminous objects, and feedback processes before and during reionization.



Paul Langacker
Particle Physics · Institute for Advanced Study
Funding provided by the National Science Foundation; IBM Einstein Fellow

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

Ari Laor
Astrophysics · Technion–Israel Institute of Technology · *f*
Funding provided by The Ambrose Monell Foundation

Ari Laor's research concerns the stellar kinematic signature near a massive binary black hole, the structure of the inner accretion disk near a massive black hole, and the effects of dust on highly photoionized dusty plasma near a massive black hole.

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

Members and Visitors

Rachel Mandelbaum
Astrophysics · Institute for Advanced Study
Hubble Space Telescope Fellow

Rachel Mandelbaum continues to work in the field of weak gravitational lensing. Her work includes an analysis of data to answer a variety of questions related to galaxy formation and evolution, and development of techniques for using lensing as a probe of cosmological parameters and basic physics.

Elke Katrin Markert
Biology · Institute for Advanced Study

Elke Markert's research background is in algebraic topology, where she has been studying structures emerging from mathematical quantum field theory. During her stay at the Institute, she plans to work on the analysis of higher-level structures in biological systems using the mathematical framework of hyperstructures. She will also begin to study the influence of gene regulation in cancer and other diseases.

Dario Martelli
Mathematical and Particle Physics · Institute for Advanced Study
Funding provided by the National Science Foundation

Dario Martelli continues to develop his approach to the AdS/CFT correspondence. He is also exploring aspects of Sasaki-Einstein and Calabi-Yau geometry as a framework for studying the correspondence.

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

Patrick Meade's research concerns theoretical high-energy physics. He is primarily focused on ideas related to the upcoming experiments at the Large Hadron Collider. Additionally, he continues to explore connections between particle physics and cosmology.

Shoichi Metsugi
Systems Biology, Drug Discovery · Chugai Pharmaceutical Co., Ltd., Tokyo · *f*

Shoichi Metsugi trys to apply systems biology to the discovery of new drugs. His interests are the integration of various experimental data such as gene expression, gene regulation, and characteristics of DNA or protein sequences to make models of phenomena in the human body, which leads to new drugs that work in innovative ways.

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

Members and Visitors

Todd P. Michael

Biology · Waksman Institute of Microbiology, Rutgers, The State University of New Jersey · *v*

Todd Michael's research focuses on understanding how environmental influences, both biotic (other organisms) and abiotic (light and temperature), shape genome structure and variability. His work primarily focuses on plant genomes, which represent an unprecedented spectrum of evolutionary histories and sizes.

Jonathan Mitchell

Astrophysics · Institute for Advanced Study

Funding provided by the W. M. Keck Foundation Fund

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

Donal O'Connell

Particle Physics · Institute for Advanced Study

Funding provided by the United States Department of Energy; Martin A. and Helen Chooljian Member

Donal O'Connell expects that his research for the year will focus on general features of new physics that might be discovered at the Large Hadron Collider. Some examples are sources of CP violation and new physics associated with stabilizing the Higgs mass.

Burt Alan Ovrut

String Theory and Particle Cosmology · University of Pennsylvania

Funding provided by The Ambrose Monell Foundation

One of Burt Ovrut's research interests is in formal aspects of string compactifications with applications to building realistic particle physics models. He also studies the predictions of string theory for particle cosmology. He is interested in constructing alternative early universe scenarios and their implications for non-Gaussianity in the cosmic microwave background.

Margaret Pan

Astrophysics · Institute for Advanced Study

Funding provided by the National Science Foundation; Frank and Peggy Taplin Member

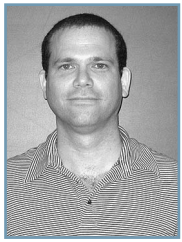
Margaret Pan is exploring solar system dynamics, extrasolar planets, the Kuiper belt, and relativistic self-similar solutions.

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

Members and Visitors

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

During Michele Papucci's stay at the Institute, he will continue to work on particle physics, with particular emphasis on models of electroweak symmetry breaking and how they can be tested using data coming from collider experiments.



Gil Paz
Particle Physics · Institute for Advanced Study
Funding provided by the United States Department of Energy and the United States-Israel Binational Science Foundation

Gil Paz will work on projects related to the observation and study of new physics at the Large Hadron Collider. He will also continue to work on inclusive B decays and their implications for extracting Standard Model parameters and constraining models of new physics.

Martin Pessah
Astrophysics · Institute for Advanced Study

Martin Pessah's work focuses on understanding the properties of turbulent magnetized accretion flows under a wide variety of physical conditions; developing accretion disk models for which angular momentum transport is mediated by magneto-hydrodynamic turbulence; and understanding the similarities exhibited by the global spectral and timing properties of accreting binary systems and Active Galactic Nuclei.

Gunaretnam Rajagopal
Biology · The Cancer Institute of New Jersey · *v*

Gunaretnam Rajagopal's research is at the interface of systems biology, medicine, and population sciences. He is developing integrative, quantitative techniques to probe the underlying biological mechanisms governing the control and regulation of cellular processes with the goal of addressing fundamental problems in cancer prevention, treatment, and control.

Douglas Rudd
Astrophysics · Institute for Advanced Study

Douglas Rudd is using high-resolution cosmological simulations to study the growth and evolution of large-scale structure in the universe. In particular, he has been examining techniques to constrain the as-yet poorly understood physics of galaxy formation through large astronomical observations.

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

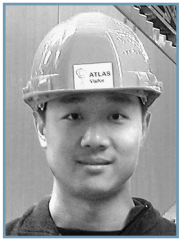
Members and Visitors

Alexia Schulz
Astrophysics · Institute for Advanced Study
Corning Glass Works Foundation Fellow

While at the Institute, Alexia Schulz will examine astrophysical probes of large-scale structure in the universe to discover signatures that may shed light on the interplay between dark matter, baryonic matter, and dark energy in the formation processes of galaxies and clusters of galaxies.

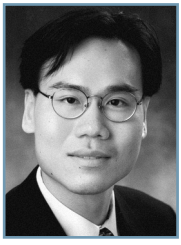
Leonardo Senatore
Particle Astrophysics, Cosmology, String Theory and Supersymmetry, Phenomenology · Harvard University
Funding provided by the National Science Foundation

Leonardo Senatore works on the connections between theoretical physics and cosmology. He is working on subjects ranging from eternal inflation and the string landscape, applications of effective field theory to inflation, new bouncing cosmologies, and data analysis of cosmological experiments such as the Wilkinson Microwave Anisotropy Probe.



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

David Shih is working on particle phenomenology and collider physics at the Institute, with a focus on building models to describe the eagerly anticipated flood of data from the Large Hadron Collider.



Gary Shiu
String Theory, Particle Physics, Cosmology · University of Wisconsin–Madison · *s*
Funding provided by The Ambrose Monell Foundation

Gary Shiu's research area can be broadly summarized as string phenomenology, whose goal is to connect string theory to particle physics and cosmology. With the start of the Large Hadron Collider and several upcoming cosmology missions, string phenomenology will be an exciting and timely research area in the coming years.

Aristotle Socrates
Astrophysics · Princeton University
Friends of the Institute for Advanced Study Member

Aristotle Socrates is interested in high-energy astrophysics, particularly the physical processes that underlie accretion onto black holes and neutron stars. He plans on further understanding the effects of cosmic ray production on the mass and luminosity of galaxies and their respective black holes, as well as studying the tidal and thermal evolution of extrasolar giant planets.

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

Members and Visitors

Jun Song
Biology · Institute for Advanced Study
Martin A. and Helen Chooljian Member in Biology

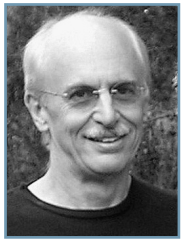
Jun Song's research focuses on studying gene regulation in humans via computational approaches. He is particularly interested in studying how chromatin structure and microRNA influence transcriptional activities in cancer.

Gustavo A. Stolovitzky
Biology · IBM Thomas J. Watson Research Center, Yorktown Heights, New York · *f*

Gustavo Stolovitzky works on different areas of computational biology and systems biology. His interests revolve around the development of algorithms for mining biological data, reverse engineering biological circuits, and modeling biological processes. During his stay at the Institute, he plans to explore plausible consequences of oscillations in biological systems.

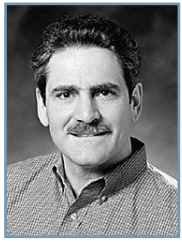
Yuji Tachikawa
Mathematical and Particle Physics · Institute for Advanced Study
Funding provided by the National Science Foundation; Marvin L. Goldberger Member

Yuji Tachikawa continues his study of the dynamics of gauge theories and gravity in the presence of eight and more supercharges, both from a purely field-theoretical perspective and from the point of view of string duality. He is also interested in various geometrical structures that naturally accompany these theories.



Charles B. Thorn
String Theory, Quantum Field Theory · University of Florida · *s*
Funding provided by The Ambrose Monell Foundation

The focus of Charles Thorn's research is to establish a string description of large N gauge theories without supersymmetry, with the goal of understanding quark confinement in QCD. He has recently been studying subcritical string theory for insight into this problem.



Salvatore Torquato
Particle Physics · Princeton University · *v*

Salvatore Torquato continues to work on the problem of the determination of the densest sphere packings in high-dimensional Euclidean spaces, and its connection to condensed matter theory and statistical mechanics. In addition, he is working on the second edition of his book *Random Heterogeneous Materials: Microstructure and Macroscopic Properties*.

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

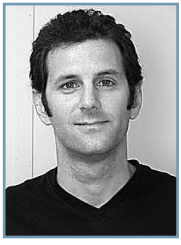
Members and Visitors

Tanmay Vachaspati
Particle Physics · Case Western Reserve University · *v*

Tanmay Vachaspati's research interests include cosmology, topological defects, and gravitational physics. During his stay at the Institute, he plans to study the formation of black holes, the generation of cosmic magnetic fields, and the properties of non-Abelian magnetic monopoles.

Glenn van de Ven
Astrophysics · Institute for Advanced Study
Hubble Space Telescope Fellow

Glenn van de Ven is investigating the dynamical structure and evolution of galaxies and globular clusters through detailed modeling of their observed photometry and two-dimensional kinematics. The three-dimensional reconstructions provide a look inside these stellar systems and allow the search for the "fossil record" of their formation history.

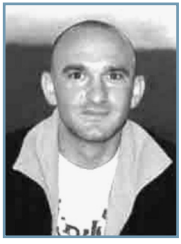


Alexei Vazquez
Biology · Institute for Advanced Study
Helen and Martin Chooljian Founders' Circle Member

At the Institute, Alexei Vazquez will continue to work on developing statistical frameworks to analyze large biological datasets and understanding the organization of biological systems. He will also study the metabolism of cancer cells.

Herman Verlinde
Particle Physics · Princeton University
IBM Einstein Fellow

Herman Verlinde's research field is string theory in all its aspects, including its applications to the study of strongly coupled gauge dynamics, black hole physics, inflationary cosmology, and its connection to particle physics beyond the Standard Model. Verlinde will continue this research and start new projects to help prepare for the Large Hadron Collider era.



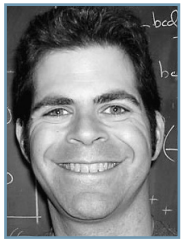
Tomer Volansky
Particle Physics · Institute for Advanced Study
Funding provided by the United States Department of Energy

Tomer Volansky's research interests span topics in particle cosmology, phenomenology of high-energy physics, and some aspects of string theory. He is mainly interested in the interface between these subjects. In the next year, he hopes to continue his study of Large Hadron Collider phenomenology and various aspects of supersymmetry and supersymmetry breaking.

Members and Visitors

Haijian Wang
Biology · Fudan University

Haijian Wang is working on genetic variations of cancer pathways and genes, with diverse interests in their functional significance in cancer biology, implications in evolutionary population genetics, and applications in translational medicine. His research also concerns regulatory variation and evolution of the transcription network of main transcription factors in cancer development.



Brian Wecht
Particle Physics · Institute for Advanced Study
Funding provided by the United States Department of Energy; Frank and Peggy Taplin Member

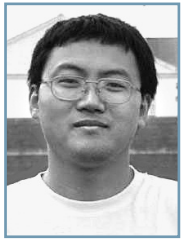
Brian Wecht works on string theory and supersymmetric gauge theories. He is currently interested in gauge mediation, supersymmetry breaking, and novel compactifications of string theory.

Paul Wiita
Astrophysics · Georgia State University

Paul Wiita investigates the structure and evolution of radio galaxies, blazars, and other types of active galactic nuclei. His research currently focuses on the impact of radio galaxies on the growth of structure in the universe and on jets and accretion disks in blazars and microquasars.

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

Nadia Zakamska is studying processes near compact objects, such as neutron stars and black holes. In particular, she is investigating the structure and origin of relativistic outflows using theoretical and observational methods. She will also pursue her interests in dynamics of stellar and planetary systems.



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

At the Institute, Zheng Zheng will study the large-scale structure of the universe probed by the distribution of galaxies and use it to learn about galaxy formation and evolution. He is also interested in many other fields of astrophysics, such as radiative transfer of Lyman-alpha photons and its applications.

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

School of Social Science

Administrative Officer: Donne Petito

Founded in 1973, the School of Social Science at the Institute for Advanced Study 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; and about the explanatory power of rational choice in the analysis of political decision-making and economic exchange. Although each is rooted in his or her own discipline, all do work that transcends disciplinary boundaries.

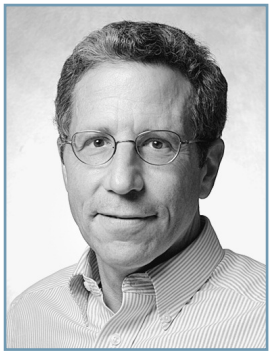
The School operates under the guiding principles of informality and collegiality and with a shared understanding that the social sciences are not to be narrowly defined. Each year the School brings together scholars from various fields—including political science, economics, law, psychology, sociology, 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 2008–09 academic year, "Social Norms and Cooperation," will be planned by Albert O. Hirschman Professor Eric S. Maskin, in consultation with Simon A. Levin, Professor of Ecology and Evolutionary Biology, and Deborah A. Prentice, Professor of Psychology, both of Princeton University. How do prescriptions for behavior become social norms? How do norms serve to promote cooperation? What are their other effects? Because of the importance of social norms and the contention they generate, their analysis embraces virtually all the social sciences (as well as other disciplines such as neuroscience, ecology, and evolutionary biology).

Faculty

Danielle Allen
UPS Foundation Professor

Danielle Allen is a political theorist who has published widely 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. This year she is finishing a book called "Philosophy in Politics" and several essays on the impact of the Internet on politics. She will also be preparing for the 2009–10 theme, "Education, Schools, and the State."



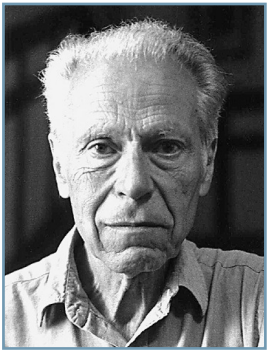
Eric S. Maskin
Albert O. Hirschman Professor

Eric Maskin is probably best known for his work on the theory of mechanism design for which he shared the 2007 Nobel Memorial Prize in Economics. He has made contributions to many other areas of economics as well, including the theory of income inequality, the study of intellectual property rights, and political economy.

Joan Wallach Scott
Harold F. Linder Professor

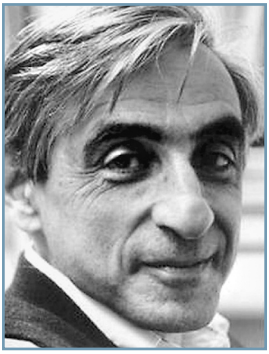
Joan Scott's groundbreaking work has challenged the foundations of conventional historical practice, including the nature of historical evidence and historical experience and the role of narrative in the writing of history. Her recent books have focused on the vexed relationship of the particularity 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.

Faculty



Albert O. Hirschman
Professor Emeritus

During his retirement years, Albert Hirschman continued to work and write on problems of economic development in Latin America as well as on more general social-science subjects. Lately, health problems have forced him to retire from active academic work.



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.

Members, Visitors, and Research Staff

Robert B. Ahdieh
Law · Emory University · *v*

Robert Ahdieh is developing a theory of regulation grounded in coordination, rather than Prisoner's Dilemma dynamics of cooperation. Given the growing importance of patterns of innovation and integration in industrialized and newly industrializing states, the alteration of incentives may be a relatively lower priority for law and regulation than disseminating information, shaping expectations, and enhancing rationality.

Jessica R. Cattelino
Anthropology · University of California, Los Angeles

Jessica Cattelino is exploring citizenship and nationalism in the Florida Everglades. Working with Seminoles and their nonindigenous neighbors, she shows how and why "saving the Everglades" is as much a political and social project as an ecological one.

Aurelian Craiutu
Political Science · Indiana University

Aurelian Craiutu is researching the multifarious ways in which moderation was conceptualized over time and came to be articulated in political practice. His project addresses the following questions: What does it mean to be a moderate voice in political and public life? What are the virtues and limitations of moderation?

Lee Cronk
Anthropology · Rutgers, The State University of New Jersey

Lee Cronk is working on a book on the evolution of cooperation among humans. His goal is to clarify important theoretical, conceptual, and methodological issues in the study of human cooperation by bringing together scholarly traditions from a wide range of fields that heretofore have remained largely separate.

Souad Eddouada
Anthropology, Law · Université Ibn Tofail · *v, f*

Souad Eddouada is examining a Moroccan feminist social movement launched in the 1990s that culminated in the 2004 Moroccan Family Code reforms. She aims to delineate some of the discursive representations and practical implementations of the 2004 reform and analyze a series of post-2004 feminists positions on the issues of gender justice and reform.

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

Members, Visitors, and Research Staff

Zouhair Ghazzal
Law · Loyola University Chicago

Zouhair Ghazzal's research covers legal practices and the making of law in contemporary Syrian society (from the 1980s to the present) within a comparative anthropological perspective. His research bypasses the notion of "Islamic law" by focusing on the normative practices of the law within situated encounters, and it aims at connecting, through interdisciplinary approaches, various societies and legal practices within west Asian societies.

Michelle Girvan
Physics · University of Maryland
Ginny and Robert Loughlin Founders' Circle Member

Understanding the spread and stability of social norms requires the consideration of the connectivity of individuals within the population. In her research, Michelle Girvan will consider the influence of network structure on the spread of ideas as well as the coevolution of network structure and social identity.

Joanne Gowa
Political Science · Princeton University

Only recently have attempts been made to measure the impact of GATT/WTO on trade. Findings diverge widely and Joanne Gowa seeks to untangle the sources of these differences in order to generate an accurate measure of the impact of what is perhaps the paradigmatic case of an international institution.

Charles M. Haar
Law · Harvard Law School · *v*

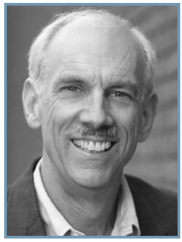
Having served as President Lyndon B. Johnson's first Assistant Secretary for Metropolitan Development in his newly established Department of Housing and Urban Development, Charles Haar will reassess the Great Society programs, focusing on the efforts at coordination among different levels of government and the roles of different interest groups in achieving the Great Society ideals.

Yuval Jobani
Hebrew Culture · Tel Aviv University · *a*

Yuval Jobani is working on a project, chaired by Professor Michael Walzer, that sheds light on the little-known and unexplored Jewish tradition of political thinking and writing. He is researching Jewish intellectual reactions to historical events as well as other conceptions of political phenomena such as war and peace.

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

Members, Visitors, and Research Staff



Robert O. Keohane
Political Science · Princeton University · *v*

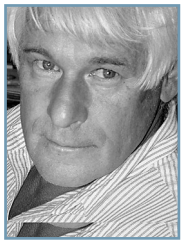
Robert Keohane is interested in how international regimes that regulate state and nonstate activities are created, how they operate, and under what conditions they are effective. He plans to look at how social norms develop and how international regimes should be designed in light of our knowledge of how they operate.

Beth L. Leech
Political Science · Rutgers, The State University of New Jersey · *v*

Beth Leech will be working on a book that connects research in the social sciences on collective action theory to similar work in psychology and evolutionary biology. She also will be investigating the use of coordination games to explain agenda-setting processes in Congress and in public policy more generally.

Simon Levin
Ecology and Evolutionary Biology · Princeton University · *vp*

Simon Levin is looking at the relationship between macroscopic patterns in ecological and economic systems and microscopic mechanisms that operate primarily at the level of individuals on contemporary and evolutionary time scales. Mathematically, he is also working on the development of macroscopic descriptions for the collective behavior of large and heterogeneous ensembles, which are subject to continual evolutionary modification.



Charles J-H Macdonald
Social Anthropology · CNRS and Université de la Méditerranée, Aix-Marseille II
Funding provided by the Florence Gould Foundation Fund

Charles Macdonald is examining a set of principles that diverge from the basic rules defining social order in standard socioanthropological theory. Defining a divergent model of organization, which he calls "non-structural," "non-social," or "gregarious," he will look at various aspects of cooperation within this novel conceptual framework.

Darrel Moellendorf
Philosophy · San Diego State University
Friends of the Institute for Advanced Study Member

Darrel Moellendorf will pursue research on moral matters relating to anthropogenic climate change. These include the justification, content, and relative weight to give to duties of global and intergenerational justice to mitigate climate change. They also include the moral attitudes appropriate in light of the vast scale of the impact on the natural world.

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

Members, Visitors, and Research Staff

Helen Nissenbaum

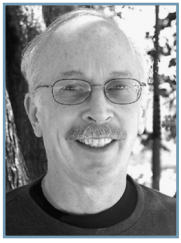
Moral and Political Analysis of Digital Technologies and Information Systems · New York University · *v, f*

Helen Nissenbaum is working on a framework for understanding and evaluating threats to privacy inherent in many technology-based information systems and practices. A second project explores how moral and political values may be embedded in the design of technical systems, with particular focus on video and computer games.

Sten Nyberg

Economics · Stockholm University
Deutsche Bank Member

Sten Nyberg's research is focused on the interaction between social norms and economic incentives, in particular norms relating to achievement and the labor market. It concerns both the economic effects of such norms and how economic considerations influence their emergence.



Barry O'Neill

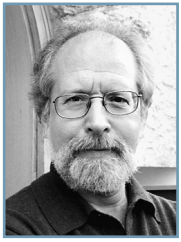
Political Science · University of California, Los Angeles
Leon Levy Foundation Member

Barry O'Neill is researching the prestige involved in a state's acquisition of nuclear weapons and the recognized taboo against their possession or use. He will look at how prestige value, the taboo, and the clear boundary that separates nuclear weapons from other weapons depend on higher-order beliefs and attitudes of others, which are susceptible to the use of game theory.

Deborah A. Prentice

Social Psychology · Princeton University · *vp*

Deborah Prentice studies the psychology of social norms—how norms arise from and, in turn, influence perceptions and behaviors in social contexts. Her current research focuses on people's emotional reactions to violations of social norms. She is also interested in how norms can be used in interventions designed to change behavior.



Jonathan Rieder

Sociology · Barnard College · *v*

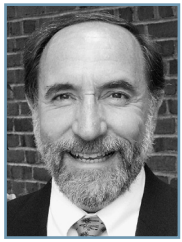
In his current project, Jonathan Rieder seeks to draw out the more general implication of his recently published book *The Word of the Lord is Upon Me: The Righteous Performance of Martin Luther King, Jr.*, in which he examined King's shifts between ethnic and civic, "black" and "universal" idioms as he moved between black and white audiences.

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

Members, Visitors, and Research Staff

Catherine J. Ross
Law · The George Washington University Law School

Catherine Ross will explore conflicts over values in U.S. public schools that involve the rival interests of students, parents, and the state. These disputes involve issues such as differences over curriculum (sex education to Creationism); silent and spoken prayer; symbols of identity; culture and religion; and political and academic speech by students themselves.



Daniel I. Rubenstein
Ecology and Evolutionary Biology · Princeton University · *v*

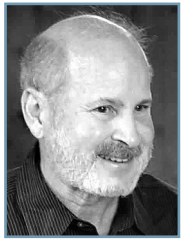
Daniel Rubenstein will explore how cooperation emerges and maintains large and diffuse societies, where status, reputation, and even systems of justice and morality shape social relationships. He hopes to identify ways in which "mutual coercion, mutually agreed upon"—Garrett Hardin's oft-cited solution to avoiding the "Tragedy of the Commons"—can be realized and used to address environmental degradation, overpopulation, and armed conflicts.

Teemu Ruskola
Law · Emory University

There is no sustained historical and analytic treatment of China' s role and place in the making of modern international law. Teemu Ruskola's project will examine the history of the introduction of Western international law in China, as well as the theoretical implications of that history for international law more generally.

Rajiv Sethi
Economics · Barnard College
Richard B. Fisher Member

Rajiv Sethi will address two main questions: Will a strictly enforced policy of equal opportunity in contractual relations be enough to ensure eventual convergence of economic well-being across groups? Should the assignment of individuals to scarce educational or employment opportunities be contingent on group membership, as is the case with affirmative-action policies?



Richard A. Shweder
Anthropology · The University of Chicago
Rosanna and Charles Jaffin Founders' Circle Member

Richard Shweder is exploring the ethical and legal foundations of tolerance for diversity and examining norm conflicts between mainstream populations and cultural minority groups in a variety of national multicultural sites. He will mainly address the question: How much of global cultural diversity is domestically viable within a liberal pluralistic democracy such as the United States?

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

Members, Visitors, and Research Staff

Michael E. Staub
Cultural History · Baruch College, The City University of New York

Michael Staub is researching the obsession with madness in the 1960s to make possible a new and strikingly transnational account of the New Left and counterculture, while also helping to provide more complex histories of the disciplines of sociology, anthropology, and psychology in this era.

Pontus Strimling
Economics · Centre for the Study of Cultural Evolution, Stockholm University · *v*

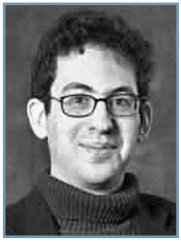
Pontus Strimling is studying the evolution of social contracts. He will use mathematical modeling and experimental economics to build predictive theories for how social contracts are upheld and how they change over time.

Kazuko Suzuki
Sociology · Texas A&M University · *v*

Kazuko Suzuki will pursue the idea that race is neither a universal concept nor an idea purely born out of Western modernity. She will argue that the Asian perspective shows that race can be understood "topologically," that is, as something that retains an inner core but that must be understood as having different phases over time that are interconnected historically.

Diego Alejandro von Vacano
Political Science · Texas A&M University

Diego von Vacano will engage a question posed by Samuel Huntington: Do new immigrants change the national identity of the host country? He will argue that a cosmopolitan model using a Nietzschean notion of ressentiment can help us understand immigrant identity formation in advanced democratic states.



Jonathan L. Weinstein
Economics · Northwestern University
Deutsche Bank Member

Jonathan Weinstein will be continuing two major projects, both addressing a classic question of game theory and decision theory: How should a decision-maker cope rationally with an uncertain world? These projects involve a) robustness to incomplete information of predictions in game-theoretic and economic models and b) testing the probabilistic predictions of experts.

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

Members, Visitors, and Research Staff

Niza Yanay
Sociology · Ben-Gurion University of the Negev

Niza Yanay intends to complete a book on the ways that hatred operates and circulates as both an emotion and as a discourse. She plans to combine the insights of sociology and psychoanalysis in order to propose a theory of hatred that seeks to understand the kind of connections that hatred produces and serves.

Muhamet Yildiz
Economics · Massachusetts Institute of Technology
Roger W. Ferguson, Jr., and Annette L. Nazareth Member

Muhamet Yildiz is researching conflict resolution, the sources and implictions of belief differences, and sensitivity of game theoretical predictions to private information, particularly as they relate to: sentiments in coordination on cooperative behavior; durability of bargaining power and optimism in reaching an agreement and conflict resolution; and systematic biases about other individuals' behaviors.

Program in Interdisciplinary Studies

The Program in Interdisciplinary Studies explores different ways of viewing the world, spanning a range of disciplines from physics—especially computational astrophysics, geology, and paleontology—to artificial intelligence, cognitive psychology, and philosophy. The program is headed by Professor Piet Hut.

Faculty

Piet Hut
Professor

The focus of Piet Hut's research is computational astrophysics, in particular multiscale multiphysics simulations of dense stellar systems. In addition, he is actively involved in interdisciplinary explorations in the areas of cognitive science and philosophy of science centered around questions involving the nature of knowledge. In both areas he has recently started to explore the use of virtual worlds to enable remote online collaborative research through simultaneous "lab meetings" with colleagues from Europe, Japan, the United States, and elsewhere.

Visitors

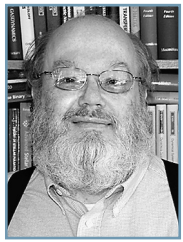
Karen Sobel Lojeski
Social Sciences · Stevens Institute of Technology

Karen Lojeski discovered "virtual distance," a phenomenon born out of the Digital Age. Her continued research focuses on how extensive electronic communications change the way we perceive others, ourselves, and the world around us, as well as the way we think, the way we feel, and the way we contemplate.

Doron Malka
Physics · Negevtech Ltd., Rehovot, Israel

Doron Malka will work on interdisciplinary projects concerning cognitive science and a critical investigation of the nature of scientific knowledge in collaboration with Professor Piet Hut. Drawing on his background in physics, Malka will explore parallels and differences between the objective methods used in physics and the intersubjective methods used in other fields.

Visitors



Edwin L. Turner

Astrophysics · Princeton University

Edwin Turner will be working on statistical biases and estimators for samples of exoplanets detected by various techniques, on target selection algorithms for the N-PAC SEEDS project, and on the implications of complexity in cellular automata systems for the limits of reductionism.

Mark van Atten

Philosophy of Mathematics, Phenomenology · Institut d'Histoire et de Philosophie des Sciences et des Techniques, Université Paris 1

Mark van Atten's work so far has been on Brouwer's intuitionism, Gödel's platonism, and Husserl's phenomenology. During his stay at the Institute, he will work on Husserl's phenomenology and contemplative traditions, and Gödel and Leibniz.

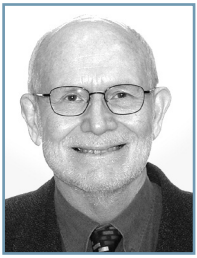
Vanessa van Atten

Library Information Science, Human and Social Sciences · Bibliothèque Nationale de France

Vanessa van Atten is interested in library services development: bibliographical information, catalogue interfaces, databases, digital libraries, conservation of paper, and digital collections.

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.

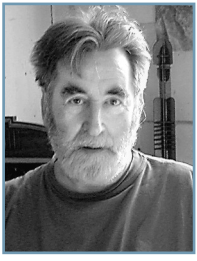


Peter Clarke
Professor Emeritus of Modern British History at the University of Cambridge

Winston Churchill's career as a statesman is hardly under-researched. But his career as an author—his day job for most of the 1930s—remains relatively neglected. This was when he drafted four volumes on the *History of the English-Speaking Peoples*. It was a concept that he appropriated with telling effect, and both its origin and its reception are worthy of serious historical attention.

Fiona Maddocks
Writer

As a writer on music (particularly opera) and wider cultural issues, Fiona Maddocks welcomes the chance to think without deadline or brief. Although she might hope to solve some problems in a book that she is writing, her real ambition is to look at a blank sheet of paper.



Tom Phillips
Painter, writer, composer

Since in popular literature there is now quantum this and quantum that, Tom Phillips shall be trying to understand the implications of *Quantum Poetics*, the title of a picture that [see on tomphillips.info] he is doing in London and shall be thinking about on Einstein Drive.

Maria Tippett
Former Senior Research Fellow at Churchill College, University of Cambridge

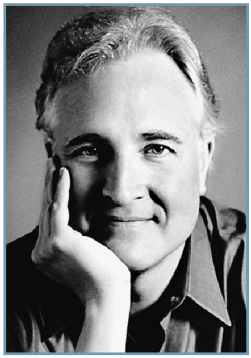
Maria Tippett is writing a biography of the Chinese-Taiwanese-American family of Paul and Sonia Ho. Paul Ho was an innovator of the Chinese typewriter-computer. His son, the director of the Aaron Diamond AIDS Research Center in New York, developed the antiretroviral therapy known as the AIDS cocktail. The trajectory of the Ho family's history speaks to the experience of the Chinese diaspora in the United States.

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. The Institute expects to appoint a new Artist-in-Residence for 2009.

Artistic Consultant

This year, Pulitzer Prize–winning composer Paul Moravec will serve as Artistic Consultant to the Institute, organizing the Edward T. Cone Concert Series. As with the "Tradition Redefined" season he organized while Artist-in-Residence last year, Moravec will continue to explore the wide variety of aesthetic perspectives in art music, especially of the twentieth and twenty-first centuries.



Paul Moravec
Composer

The recipient of the 2004 Pulitzer Prize in Music, Moravec has composed more than ninety orchestral, chamber, choral, lyric, film, and electro-acoustic arrangements. His new opera *The Letter*, composed at the Institute last year, is scheduled to premiere at the Santa Fe Opera in the summer of 2009. He also completed *The Blizzard Voices*, an evening-length oratorio, which Opera Omaha premiered in September 2008.

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(in order of service)

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JOHN N. BAHCALL · ARNE K. A. BEURLING · ARMAND BOREL

LUIS A. CAFFARELLI · HAROLD F. CHERNISS · MARSHALL CLAGETT

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ERNST H. KANTOROWICZ · GEORGE F. KENNAN · T. D. LEE

ELIAS A. LOWE · JACK F. MATLOCK, Jr. · MILLARD MEISS

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BENGT G. D. STRÖMGREN · HOMER A. THOMPSON · KIRK VARNEDOE

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Momota Ganguli
Librarian, Mathematics and Natural Sciences

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

School Administration

Mary Jane Hayes
Administrative Officer
School of Mathematics

Donne Petito
Administrative Officer
School of Social Science

Michelle Sage
Administrative Officer
School of Natural Sciences

Suzanne P. Christen
Executive Director and Administrator
The Simons Center for Systems Biology
School of Natural Sciences

Marian Gallagher Zelazny
Administrative Officer
School of Historical Studies

Programs

Catherine E. Giesbrecht
Administrator, IAS/Park City Mathematics Institute

Arlen K. Hastings
Executive Director
Science Initiative Group

David R. Mandel
Executive Director, Carnegie-IAS Commission on Mathematics and Science Education

Computing, Telecommunications, and Networking Administration

Jeffrey Berliner
Manager of Computing

Jonathan Peele
Computer Manager
Information Technology Group

James Stephens
Computer Manager
School of Natural Sciences

Thomas Howard Uphill
Computer Manager
School of Mathematics

Edna Wigderson
Manager
Databases and Integration

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SHS School of Historical Studies · *SM* School of Mathematics · *SNS* School of Natural Sciences · *SSS* School of Social Science

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