Volume 51 • Issue 4

The members' magazine of the Institute of Mathematical Statistics

IMS Bulletin

June/July 2022

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Read it online: imstat.org/news

IMS London meeting

We're excited to welcome you to London, for our first in-person IMS Annual Meeting since 2019. We invite you to join a gathering of statisticians, probabilists, data scientists and others, at the meeting in central London from June 27–30 (and, if your schedule allows, stay on for the one-day IMS–COLT workshop on July 1, which is included in your registration fee.)

Meeting highlights include a range of special IMS lectures. Previewed in this issue are the Wald lectures by Martin Hairer (see page 9), the inaugural Grace Wahba lecture by Michael I. Jordan (p.10), and Medallion lectures from Rodrigo Bañuelos (p.11) and Roman Vershynin (p.12). Previous issues have included previews of the Neyman lecture (Heping Zhang), the Rietz lecture (Hans-Georg Müller), and another Medallion lecture (Rina Foygel Barber), as well as the IMS/BS Schramm Lecture (Russell Lyons) and the Lawrence Brown PhD Student Award winners (Rungang Han, Rong Ma, and Chan Park). There are also 60 invited sessions, shared between probability and statistics topics, and 17 topic-contributed sessions. See the program (or programme, if you want to be British about it), and more, at https://www.imsannualmeeting-london2022.com.

Editor's Comment

Tati Howell writes: *I have worked with the IMS for over 20 years, and have lived in London, my adopted city, for the past decade. For the first time, I'm in a position to welcome delegates to "my manor" (think cockney rather than Downton). If you haven't been to London before, this is a great time to visit, as the Queen celebrates her Platinum Jubilee (70 years as monarch) in June, and there are lots of events and activities to mark this. Just around the corner from the conference venue, for example, in the British Museum, there will be an exhibition of the work of Mary Gillick, the artist who modeled the Queen's head for coins in 1953. (There are also lots of family-friendly events at the museum, so if you're bringing the kids, check them out! And don't forget to* ***apply for the IMS childcare grant****: see below). You can see the changing of the guard at Buckingham Palace, take a ride on the new "Elizabeth Line" (Crossrail) tube line, board a classic London bus, explore our lovely parks, eat in the myriad restaurants representing cuisines from around the world, see amazing art in a gallery or on a brick wall… See page 14 for more highlights!*
I look forward to seeing you at the meeting.

Are you bringing a child to the IMS Annual Meeting in London? Apply to the IMS Child Care Initiative, and the IMS will reimburse 80% of the costs of privately arranged child care (for a dependent under 13), up to a maximum of US$250 per family. Priority will be given to those presenting papers or posters at the meeting. Deadline June 1.

https://www.imstat.org/meetings/ims-child-care-initiative/

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Executive Committee

IMS Members' News

Anru Zhang selected to receive 2022 Tweedie New Researcher Award

The IMS Committee on Travel Awards selected **Anru Zhang** to receive the 2022 Tweedie New Researcher Award. Anru Zhang is the tenured Eugene Anson Stead Jr., MD, Associate Professor at the Departments of Biostatistics & Bioinformatics, Computer Science, Mathematics, and Statistical Science at Duke University, and an adjunct faculty member at the Department of Statistics, University of Wisconsin–Madison. He received his PhD from the University of Pennsylvania in 2015 (advised by T. Tony Cai) and a Bachelor's degree in mathematics from Peking University in 2010.

Read more about him on his webpage: https://anruzhang.github.io/.

Dr. Zhang's citation reads, "For his fundamental contribution to tensor learning and significant contributions to high-dimensional statistical inference, non-convex optimization, and statistical learning theory, as well as his contribution to the statistical profession through mentorship of students."

He will present the Tweedie New Researcher Invited Lecture at the IMS New Researchers Conference (formally, the 22nd Meeting of New Researchers in Statistics and Probability: see https://imstat.org/nrc2022/) at George Mason University, August 3-6, 2022.

The Tweedie Award and Lecture was created in memory of Australian statistician Richard Lewis Tweedie (1947–2001): https://imstat.org/ims-awards/tweedie-new-researcher-award/

Song Xi Chen Elected to Chinese Academy of Science

IMS member and Fellow **Song Xi Chen** of Peking University has been elected a member of the Chinese Academy of Science (CAS). He was elected, along with 64 other scholars, to the academy during the 2021 Assembly of Academicians of CAS held in November 2021.

He is elected to the Mathematics and Physics Division. The previous statistics members of CAS were the late Professors Pau Lu Hsu (1948–1970) and Xiru Chen (1997–2005).

Chen is currently a Peking University Chair Professor in the School of Mathematical Sciences, Guanghua School of Management and Center for Statistical Science. Prior to joining Peking University as the Chair of the Business Statistics and Econometrics Department in 2008 and later as the founding director of Center for Statistical Science, he had held faculty positions in Iowa State University, National University of Singapore, La Trobe University, CSIRO Marine Laboratory and Beijing Economic College. He was elected as an IMS fellow in 2009, and was a council member of IMS from 2017–2019.

IMS Members' News

Symposium and Honorary Doctorate awarded to Ingrid Van Keilegom at UDC

On June 16, 2022, Professor **Ingrid Van Keilegom** (KU Leuven, Belgium) will be awarded an Honorary Doctorate by the University of A Coruña (UDC), Galicia, Spain. The ceremony will take place in the auditorium of the UDC rectorate. Taking advantage of this event, a symposium will be held the day before, June 15, 2022. This International Symposium on Recent Advances in Statistics, in Honor of Ingrid Van Keilegom, is organized by the research group MODES, Department of Mathematics, UDC. Ingrid herself, and seven invited speakers who have collaborated with her, will present some work related to Ingrid's own research.

For registration and any other relevant information about this symposium please visit the website: http://dm.udc.es/symposium_2022/

ISI Elected Members

The International Statistical Institute has announced the ISI Elected members, elected in the first round of the 2022 ISI membership elections, among whom were the following IMS members: **Bendek B. Hansen**, University of Michigan; **Yao Zheng**, University of Connecticut; and **Ling Zhou**, Southwestern University of Finance and Economics, China.

Dr. Hansen teaches statistics and maintains research interests in matching and design-based inference for observational studies and experiments; applications in education, medicine and social science; and statistical software. Dr. Yao Zheng is Assistant Professor in the Department of Statistics at the University of Connecticut. She obtained her B.S. and Ph.D. from the University of Hong Kong in 2013 and 2017, respectively. Her main research interests include time series analysis, high-dimensional statistics, statistical learning and econometrics. [*She is also an IMS New Researcher Travel Award winner: see page 8.*] Ling Zhou's research interests include statistical methods development on data integration, nonparametric methods, subgroup analysis, and statistical applications in medicine, economics, nutrition, and environmental health.

The list of new ISI elected members is at https://www.isi-web.org/news/node-1448.

Dimitris Politis receives Endowed Chair at UC San Diego

The Halıcıoğlu Data Science Institute (HDSI) at UC San Diego has announced Professor **Dimitris Politis** as a HDSI Chancellor's Endowed Chair, the second of ten chair-holders who are being honored for outstanding research scholarship and contributions to UC San Diego and the larger data science community. As an associate director of HDSI and Distinguished Professor of mathematics, his work investigates computer-intensive statistical methods, nonparametric statistics and econometrics, and time series analysis with the goal of developing a general approach for statistical inference without model restrictions.

Dimitris Politis is an internationally-renowned scholar in mathematics and economics, having worked extensively on time series analysis, bootstrap methods, and nonparametric estimation, a world-leading researcher with authorship of over 100 journal papers and monographs. (He was *IMS Bulletin* Editor from 2011–13.) Politis earned his PhD in statistics from Stanford University, and dual masters' degrees from Stanford in statistics and mathematics. He also holds a master's degree from Rensselaer Polytechnic Institute in computer and systems engineering, and his bachelor of science degree in electrical engineering from the University of Patras in Greece. See www.math.ucsd.edu/~politis

Meet the 40 new IMS Fellows for 2022

Jan Beran

University of Konstanz

For pioneering contributions to the statistical analysis of long-memory processes, and for seminal research monographs that have immensely influenced research on long-memory processes during the past 25 years.

Wlodzimierz Bryc

University of Cincinnati

For fundamental contributions to the theory of large deviations and to the study of quadratic harnesses.

Ricardo Cao

Universidade da Coruña

For fundamental contributions to the theory and practice of bootstrapping and nonparametric function estimation, and for distinguished service to the international statistical community.

Matias D. Cattaneo

Princeton University

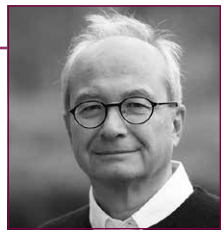
For seminal contributions to nonparametric, semiparametric and high-dimensional estimation and inference theory and methods, with notable applications to causal inference and program evaluation; for statistical software development; and for interdisciplinary professional service.

Francesca Chiaromonte

The Pennsylvania State University, and Sant'Anna School of Advanced Studies, Pisa

For outstanding contributions to methodology for the analysis of large, complex and structured data, in particular to the fields of sufficient dimension reduction and envelope model, for outstanding interdisciplinary work in the "Omics" and the biomedical sciences, and for leadership in interdisciplinary training and mentoring efforts.

Arnoldo Frigessi



University of Oslo, and Oslo University Hospital

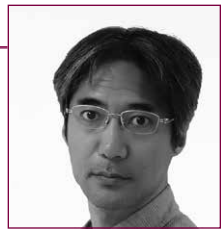
For methodological contributions particularly to Bayesian statistics, innovative work in a variety of areas of modern applied research, and dedicated service to the statistical profession, including advancement of the level of statistical expertise in developing countries.

Haoda Fu

Eli Lilly and Company

For broad scientific contributions to statistics through machine learning, personalized medicine, survival analysis, and artificial intelligence; For strong leadership in applications of statistics in medical field; and for contributions to the profession.

Masahito Hayashi



Southern University of Science and Technology, and Nagoya University

For deep and influential contributions to quantum statistics and quantum information theory.

Haiyan Huang

University of California, Berkeley

For outstanding research in applied statistics, computational biology and applied probability and major contributions to institutional establishment of computational biology within data science.

Ying Hung

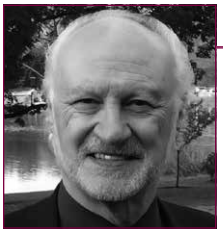
Rutgers University

For fundamental contributions to design, statistical analysis, and uncertainty quantification of computer experiments with applications in cell biology.

David R. Hunter

Pennsylvania State University

For fundamental contributions to the theory and practice of statistical computing; for major contributions to statistical modeling of networks, and mixture models; for notable contributions to the teaching of statistics; and for service to the profession.



Alan Julian Izenman

Temple University

For broad and sustained work in the theory and application of multivariate analysis, and for work on applying statistical methods to legal issues that affect society.

Zhezhen Jin

Columbia University

For ground-breaking contributions to important areas of statistics and biostatistics, including survival analysis, resampling methods, smoothing methods and statistical computing, and for dedicated and leadership service to the statistics profession.

Galin L. Jones

University of Minnesota

For fundamental contributions to Statistical computation, Markov chain Monte Carlo, and Bayesian methods, and for superb service to the profession.

Ruth King

University of Edinburgh

For significant contributions to the analysis of capture-recapture-type data, hidden Markov models, state-space models, integrated models, Monte Carlo and Bayesian methods, efficient model-fitting algorithms and missing data; and for leadership at the University of Edinburgh, the National Centre for Statistical Ecology and International Biometrics Society.

Jialiang Li

National University of Singapore

For significant contributions to nonparametric statistics, change point analysis, personalized medicine, survival analysis, and diagnostic medicine; and for a strong commitment to the advancement of statistical science through interdisciplinary research and professional service.

Pengfei Li

University of Waterloo

For ground-breaking and pioneering research contributions to the EM-test for the order of finite mixture models; for original and creative methodological developments in the areas of the empirical likelihood, density ratio models, statistical genetics, non-probability sampling; for exceptional research productivity; and excellence in statistical education.

Shujie Ma

University of California, Riverside

For outstanding contributions to statistical methodology and theory; especially in non-parametric and semi-parametric machine learning methods for massive datasets, and for excellent services to the statistical editorial boards and to the profession.

Antonietta Mira

Università della Svizzera Italiana, Switzerland and University of Insubria

For excellence in computational aspects of Bayesian statistics, for service to professional societies, and for innovative contributions in statistics communication and outreach.

Pietro Muliere

Bocconi University

For excellent research contributions to nonparametric Bayesian statistics, inspirational teaching, and steadfast long-term leadership of statistics research programs at both the national and international levels.

Jan Obloj

University of Oxford

For pioneering contributions in robust financial mathematics and related advances in probability theory and statistics, including theoretical and computational aspects of Skorokhod embeddings and martingale optimal transport problems.

Efstathios Paparoditis

University of Cyprus

For outstanding research in nonparametric statistics, including the development of different resampling methods for time series analysis; and for exemplary service to our profession and leadership at the University of Cyprus.

Limin Peng

Emory University

For innovative and significant contributions to statistical methodology for survival analysis, quantile regression, and high-dimensional inference, and for dedicated professional service.

Sonia Petrone

Bocconi University

For significant and impacting contributions to the foundations of Bayesian statistics and Bayesian nonparametric inference and prediction, as well as long-standing professional service and dedicated mentoring throughout her career.

Joan Jian-Jian Ren

University of Maryland - College Park

For innovative and significant contributions to statistical methodology, especially in nonparametric likelihood inference, survival analysis and resampling methods, and for long-lasting and dedicated professional service.

Alessandro Rinaldo

Carnegie Mellon University

For pathbreaking work on algebraic statistics, high-dimensional inference, network theory, topological inference, privacy and clustering.

Sebastien Roch

University of Wisconsin-Madison

For contributions to the applications of probability theory in evolutionary biology.

Chiara Sabatti

Stanford

For excellent research in statistical genetics; and leadership in defining a role for statistics in data science and developing educational pathways supporting data intensive science. For outreach efforts and commitment to increase research involvement of underrepresented minorities.

Bodhisattva Sen

Columbia University

For important contributions to nonparametric inference under shape constraints, optimal transport and its applications to Statistics, and the bootstrap.

Anuj Srivastava

Florida State University

For fundamental contributions to geometrical statistics, including shape analysis, functional data analysis and statistics on manifolds; and for leadership and service to the profession.

Jordan M. Stoyanov

Bulgarian Academy of Sciences

For contributions to the moment problem, and seminal and very influential monograph "Counterexamples in Probability".

Cheng Yong Tang

Temple University

For outstanding contributions to statistical methodology, theory, and applications especially in empirical likelihood, high-dimensional statistical data analysis, longitudinal and dependent data analysis.

Ambuj Tewari

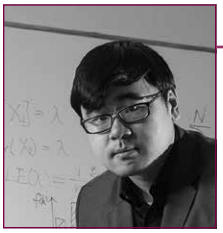
University of Michigan

For contributions to research at the interface of statistics and machine learning including online learning, bandit problems, and reinforcement learning, and for leadership in the emerging areas of mobile health and precision medicine.

Ryan Joseph Tibshirani

Carnegie Mellon University

For fundamental contributions to the applications, algorithms and inference problems related to LASSO and convex optimization methods; and conformal inference, high dimensional statistics and public health.



Ruodu Wang

University of Waterloo

For significant contributions to statistics and applied probability in operations research, risk management, and actuarial science; and highly influential interdisciplinary research bridging statistics and probability.

Daniela M. Witten

University of Washington

For substantial contributions to the field of statistical machine learning, with applications to biology; and for communicating the fundamental ideas in the field to a broad audience.

Jun Yan

University of Connecticut

For significant contributions to survival analysis and copula modeling; for high-impact technology transfer via statistical computing and software development; for influential applications in environmental sciences and public health; and for dedicated student mentoring and service to the profession.

Lan Zhang

University of Illinois at Chicago

For leadership in developing statistical concepts and methods for high-frequency data, and for conscientious mentoring and professional service.

Tian Zheng

Columbia University

For fundamental research on sparsity and variable importance, and for significant contributions to social network theory and to genetics.

Yong Zhou

East China Normal University

For outstanding contributions in semiparametric and nonparametric statistics, financial econometrics, and survival analysis; for dedicated and exemplary service to the profession; and for exceptional leadership in statistics education and development in China.

IMS Travel Awardees: *coming soon to a meeting near you!*

We present the 13 winners of the IMS New Researcher Travel Awards…


Trambak Banerjee
University of Kansas


Alessia Caponera
École Polytechnique Fédérale de Lausanne


Yaqing Chen
University of California, Davis

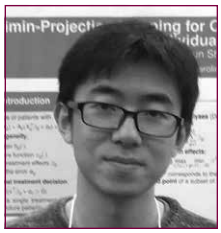

Chien-Ming Chi
Institute of Statistical Science, Academia Sinica

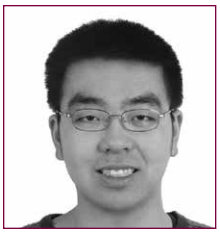

Raaz Dwivedi
Harvard University & MIT


Lihua Lei
Stanford University


Cai Li
St. Jude Children's Research Hospital


Ning Ning
University of Michigan, Ann Arbor


Chengchun Shi
London School of Economics and Political Science


Guanyang Wang
Rutgers University


Yunan Wu
University of Texas at Dallas


Fei Xue
Purdue University


Yao Zheng
University of Connecticut

…as well as the 15 winners of the 2022 IMS Hannan Graduate Student Travel Awards:


Filippo Ascolani
Bocconi University

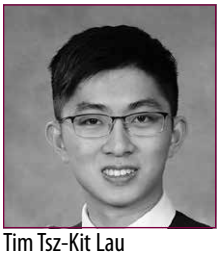

Raiha Browning
Queensland University of Technology


Felipe A. Campos
University of California, San Diego

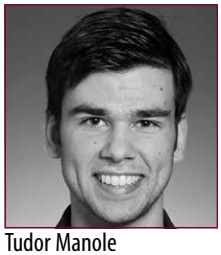

Michele Caprio
Duke University


Lucio Galeati
University of Bonn


Larry Han
Harvard T.H. Chan School of Public Health


Tim Tsz-Kit Lau
Northwestern University


Chanwoo Lee
University of Wisconsin–Madison

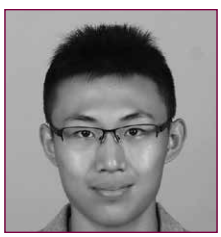

Tudor Manole
Carnegie Mellon University

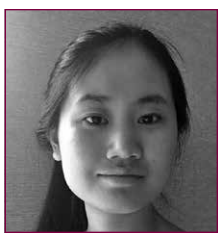

Chan Park
University of Wisconsin–Madison


Ye Shen
North Carolina State University


Jake A. Soloff
University of California, Berkeley


Weijing Tang
University of Michigan


Shuoyang Wang
Auburn University


Kelly W. Zhang
Harvard University

Special IMS Lecture Previews

Wald Lectures: Martin Hairer

Professor Martin Hairer studied at the University of Geneva, where he completed his PhD in Physics in 2001. He subsequently held positions at the University of Warwick (UK) and the Courant Institute (US), before moving to Imperial College London, where he currently holds a chair in probability and stochastic analysis. His work is in the general area of probability theory with a main focus on the analysis of stochastic partial differential equations.

Author of a monograph and over 100 research articles, Professor Hairer is a Fellow of the Royal Society as well as many other academies in Europe. His work has been distinguished with a number of prizes and awards, most notably the LMS Whitehead and Philip Leverhulme prizes in 2008, the Fermat prize in 2013, the Fröhlich prize and Fields Medal in 2014, a knighthood in 2016, the Breakthrough prize in Mathematics in 2020, and the King Faisal prize in 2022.

There will be two Wald Lectures this year, delivered by Martin Hairer at the IMS Annual Meeting in London, June 27–30. See the timetable on the meeting website, at https://www.imsannualmeeting-london2022.com/program.

Universality and crossover in 1+1 dimensions

One of the great insights of 20th century theoretical physics is Wilson's "renormalisation group" picture. Roughly speaking, he argues that one should think of the operation of "zooming out" as a dynamical system in the space of all statistical mechanics models with two models being "close" if they have similar statistical properties when probed at length scales of order unity. A tremendous amount of insight can then be gained by studying the fixed points of that system as well as its stability properties, heteroclinic orbits, unstable manifolds, etc. In the case of equilibrium models in two spatial dimensions, this picture is relatively well understood, at least at the heuristic level and for a relatively large class of models with good locality properties.

The focus of these two lectures will be on the 1+1-dimensional case, namely on models in one space dimension that evolve in time. In this situation, there are two well-known renormalisation group fixed points, namely the Edwards–Wilkinson (EW) model and the KPZ fixed point, recently characterised by Matetski, Quastel and Remenik. Since the former is more symmetric than the latter, one would expect it to be less stable, so that one can search for heteroclinic orbits, also called crossover processes, connecting it to the KPZ fixed point. It has long been conjectured that there is exactly one such crossover process, namely the KPZ equation, and that the KPZ fixed point is the "most stable" renormalisation fixed point in 1+1 dimension. We will show some recent results supporting this conjecture, in particular a proof of the fact that the directed mean curvature flow in a noisy environment converges to the KPZ equation in a suitable regime.

The second lecture will focus on a third universality class which we call the Brownian Castle (BC). This is a Markov process on a space of discontinuous functions on the line which has an explicit and relatively simple description in terms of the Brownian Web. We conjecture that the BC is less stable than either EW or KPZ, and it is again natural to ask whether it admits crossovers processes connecting it to either of these models. We will see that such processes do indeed exist, at least as far as the connection to EW is concerned. In very stark contrast to the crossover from EW to KPZ however, there is an infinite-dimensional family of such processes that all admit local descriptions and are all distinct.

These lectures are based on joint works (partly still in progress) with A. Gerasimovics, K. Matetski, G. Cannizzaro, and R. Sun.

Wahba Lecture: Michael Jordan

Michael I. Jordan is the Pehong Chen Distinguished Professor in the Department of Electrical Engineering and Computer Science and the Department of Statistics at the University of California, Berkeley. His research interests bridge the computational, statistical, cognitive, biological and social sciences. Prof. Jordan is a member of the National Academy of Sciences, a member of the National Academy of Engineering, a member of the American Academy of Arts and Sciences, and a Foreign Member of the Royal Society. He was a Plenary Lecturer at the International Congress of Mathematicians in 2018. He received the Ulf Grenander Prize from the American Mathematical Society in 2021, the IEEE John von Neumann Medal in 2020, the IJCAI Research Excellence Award in 2016, the David E. Rumelhart Prize in 2015, and the ACM/AAAI Allen Newell Award in 2009. Michael Jordan will give this inaugural Wahba Lecture at the IMS Annual Meeting in London, June 27–30, 2022.

Inferential Thinking, Computational Thinking, and Economic Thinking

I'm delighted to be presenting the inaugural Grace Wahba Lecture. My lecture will focus on emerging problems at the tripartite interface between statistics, computation, and economics. This is not a new interface—it was a focus of research going back to the 1940s, developed by luminaries such as David Blackwell, John von Neumann, and Ken Arrow—but it has been given new urgency in the modern era as statistical machine learning algorithms have come to play a prominent role in social and personal life, in settings such as commerce, transportation, finance, entertainment, and healthcare. In such settings, data is not merely "collected" and "analyzed"; rather, data emerges from interactions among self-interested agents, analysis occurs in distributed systems, there are information asymmetries and feedback loops, and the design goals for the overall system include notions such as social welfare and computational viability. Thus, loss functions need to refer to not only inferential goals, but also to social and personal concepts such as privacy, fairness, trustworthiness, environmental impact, scarcity of resources, and long-term economic value. Accordingly, ideas from microeconomics—such as incentives, multi-way markets, contracts, equilibria, and mechanism design—are needed to structure the design of inference algorithms. These economic ideas need to be revised and revitalized to incorporate modern statistical and computational methodology, recognizing the omnipresence of fine-grained data in real-world systems, and the opportunities that statistics provides for building economic systems that are adaptive, robust, and scalable.

I'll discuss several recent projects that illustrate the aforementioned tripartite interface. One project involves strategic classification, where a principal wishes to build a predictive model based on data obtained from strategic agents who have a vested interest in the outcome of the model's predictions and will alter their data accordingly. I show how different equilibria can arise depending on the relative rates of data collection and model updates. Another project studies matching markets, both with transfers and without, where agents on both sides of the market enter the market without knowing their preferences a priori. They must experiment, managing an exploration/exploitation tradeoff that is implemented via multi-armed bandit algorithms. I discuss how competition affects statistical rates. The analysis yielding these rates arises from a Lyapunov function that brings together statistical and economic considerations. In a third project, I again study a setting in which an economic mechanism is to be designed without prior knowledge of participants' preferences. Specifically, the goal is to study Myerson auctions that are based on empirical estimates of the values of items in the auction. A key issue in this problem is robustness—we would not want to propose an auction whose outcome is sensitive to possibly adversarial data. I show how a robust empirical Myerson auction can be designed that nearly maximizes revenue, while providing statistical guarantees. Finally, I'll also discuss the use of contract theory to allow principals to perform statistical inference in the face of information asymmetries. Here contract mechanisms are used to incentivize strategic agents to reveal information that is used for efficient statistical inference.

Throughout this research the goal is to have impact on real-world problems—in domains such as commerce, transportation, finance, entertainment, and healthcare where data and social interactions abound. Driving applications in these settings fundamentally require data analysis and inference, but, critically, there is also a social and economic context. Indeed, in these problems data and inferences flow among strategic agents, thereby accruing economic value, and interacting with strategic considerations. This economic perspective opens up new challenges and opportunities for statistics.

Medallion Lecture: Rodrigo Bañuelos

Rodrigo Bañuelos received his PhD from UCLA and after postdoctoral positions at Caltech and the University of Illinois, he moved to Purdue University, where he served a four-year term as Head of the Mathematics Department. His research interests are in probability and applications to harmonic analysis and spectral theory with emphasis on singular integrals and the geometry of the Laplacian and non-local operators. He has written and lectured widely on these topics.

Bañuelos has served on many editorial boards and scientific committees, including the *Annals of Probability*, *Transactions and Memoirs of the AMS*, *Revista Matemática Iberoamericana*, the United States National Committee for Mathematics, Berkeley's MSRI Scientific Advisory Council, and UCLA's IPAM Board of Trustees. He is a Fellow of the AMS, a Fellow of the IMS, and a Fellow of the Association for Women in Mathematics (AWM). He is the recipient of the 2022 AMS Award for Distinguished Public Service.

Rodrigo Bañuelos will deliver this Medallion lecture at the IMS Annual Meeting in London, June 27–30.

A Doob *h*-process and its applications to singular integrals on $\mathbb{Z}^d$

In 1979, R. F. Gundy and N. Th. Varopoulos published a beautiful three-page paper titled "Les transformations de Riesz et les intégrales stochastiques," in which they gave a representation for the Riesz transforms on $\mathbb{R}^d$ as conditional expectations of stochastic integrals. During the last 40-plus years, in combination with sharp martingale inequalities, this simple and elegant representation has been a phenomenal success in obtaining optimal, or near optimal, L^p bounds for Riesz transforms and more general singular integrals and Fourier multipliers in a variety of geometric and analytic settings. An important feature of the type of bounds obtained by this method is their independence on the geometry of the ambient space. There is now a vast literature on this topic with contributions by many authors.

The discrete Hilbert transform was introduced by David Hilbert in 1909, who proved its boundedness on ℓ^2. A long-standing open problem that has resisted the Gundy–Varopoulos approach (as well as all others) concerns the sharp ℓ^p norm, $p \in (1, \infty)$, of this operator and its higher-dimensional versions (the discrete Riesz transforms) as defined by A. P. Calderón and A. Zygmund in their seminal 1952 paper on singular integrals. For general $p \in (1, \infty)$, the boundedness of the continuous Hilbert transform and the discrete Hilbert transform on L^p and ℓ^p, respectively, was first obtained by M. Riesz (1925).

In this talk the speaker will describe a modification of the Gundy–Varopoulos method that leads to sharp ℓ^p inequalities for a collection of discrete operators on $\mathbb{Z}^d$, $d \geq 1$. When $d = 1$, after convolution with a probability kernel, the construction leads to the discrete Hilbert transform. This case shows that the classical Hilbert transform on $\mathbb{R}$, whose norm was found by S. Pichoridis in 1972, and the discrete Hilbert transform on $\mathbb{Z}$, have the same p norms. This had been a long-standing conjecture initiated in part by an erroneous proof of E. C. Titchmarsh in 1926.

For $d > 1$, the discrete operators have the same norms on $\ell^p(\mathbb{Z}^d)$ as the classical Riesz transforms on $L^p(\mathbb{R}^d)$. These norms are in fact equal to the Pichoridis constants for the norm of the classical Hilbert transform, hence, independent of d.

The talk is based on joint work with Mateusz Kwaśnicki of Wrocław University, Poland (2019), and with Daesung Kim of University of Illinois at Urbana–Champaign and Mateusz Kwaśnicki (2022).

Medallion Lecture: Roman Vershynin

Michigan Photography

Roman Vershynin is Professor of Mathematics at the University of California, Irvine. He works in high dimensional probability, with applications in data science. He is interested in random geometric structures that appear across mathematics and data science, in particular in random matrix theory, geometric functional analysis, convex and discrete geometry, geometric combinatorics, high dimensional statistics, information theory, learning theory, signal processing, numerical analysis, and theoretical computer science.

Roman was an invited speaker at the International Congress of Mathematicians in Hyderabad in 2010 and a winner of the Bessel Research Award from Humboldt Foundation in 2013. His book *High dimensional probability: An introduction with applications in Data Science* won the 2019 Prose Award for Mathematics.

This Medallion lecture will be given at the IMS Annual Meeting in London, June 27–30.

Privacy, Probability, and Synthetic Data

In a world where artificial intelligence and data science become omnipresent, data sharing is increasingly locking horns with data-privacy concerns. Among the main data privacy concepts that have emerged are anonymization and differential privacy. Today, another solution is gaining traction: synthetic data. The goal of synthetic data is to create an as-realistic-as-possible dataset, one that not only maintains the nuances of the original data, but does so without risk of exposing sensitive information. The combination of differential privacy with synthetic data has been suggested as a best-of-both-worlds solution. However, the road to privacy is paved with NP-hard problems.

This talk outlines three probabilistic approaches toward creating synthetic data that come with provable privacy and utility guarantees and doing so computationally efficiently.

This is joint work with March Boedihardjo and Thomas Strohmer.

Medallion Lecture: Huixia Judy Wang

Huixia Judy Wang is a Professor in the Department of Statistics at George Washington University (2014–) and a rotating Program Director in the Division of Mathematical Sciences at the National Science Foundation (2018–2022). Judy obtained a PhD in Statistics from the University of Illinois in 2006. She was an assistant and associate professor of Statistics at North Carolina State University from 2006 to 2014. Her main research areas include quantile regression, semiparametric and nonparametric regression, high dimensional inference, and extreme value analysis. Judy is Associate Editor of the *Annals of Statistics*, the *Bernoulli* journal, and *Journal of the American Statistical Association*. She is a Fellow of IMS and ASA, and an elected member of the International Statistical Institute.

Judy Wang's Medallion lecture will be delivered at the Joint Statistical Meetings in Washington, DC, at 10:30 am ET on August 10, 2022

Extreme Conditional Quantiles

An essential problem in many fields is the modeling and prediction of events that are rare but have significant consequences. Unexpectedly heavy rainfall, large portfolio loss, and dangerously low birth weight are some examples of rare events. For such events, scientists are particularly interested in modeling and estimating the extreme quantiles of the underlying distribution, even beyond the range of observed values, rather than the central summaries such as the mean or median. In addition, the extreme behaviors of the response of interest (e.g., heavy rainfall) may be heterogeneous, depending on some covariates such as temperature, time, and geographic location, so it is essential to incorporate covariates information in the extreme quantile analysis. Quantile regression provides a valuable semiparametric tool for modeling the conditional quantiles of a response variable given covariates. However, it is challenging to estimate and make inferences at extremely low or high quantiles due to the lack of data in the tail regions. The extreme value theory provides a mathematical justification for extrapolation to estimate extreme quantiles. Various methods and theories have been developed for inference on extreme conditional quantiles by combining the extreme value theory and quantile regression modeling.

In this talk, I will survey some recent works on estimation and uncertainty quantification for extreme conditional quantiles. In data-sparse areas, the formulation of models plays a critical role. I will discuss the problem under various models with different levels of complexity, which calls for different techniques for quantifying the tail behaviors. In addition, I will present examples in diverse areas such as climate studies and finance to demonstrate various scientific motivations and practical applications. The talk will also discuss related theoretical and computational issues and open challenges.

NOMINATE AN IMS SPECIAL LECTURER

Submit a nomination: **https://www.imstat.org/ims-special-lectures/nominations/**

The IMS Committee on Special Lectures is accepting nominations this year for:

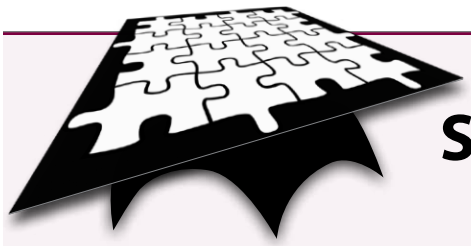
- **the 2024 Le Cam Award & Lecture**
- **the 2024 Wahba Award & Lecture**
- **the 2025 Medallion Award & Lecturers (eight awards)**

Send your nomination by October 1, 2022. Information on all lectures is available at https://www.imstat.org/ims-special-lectures/

Some London Highlights

From top, l–r: King's Cross train station; Buckingham Palace; Horse Guards; a fish & chip shop; London Eye and the Houses of Parliament; Greenwich Park; Mary Gillick with her coin (see cover article).

Mary Gillick photo: British Museum. All others: Visit London



Student Puzzle Corner 39

Student Puzzle Editor Anirban DasGupta poses a probability problem. The problem is a relatively simple one in the domain of asymptotic probability.

The requested probability would be difficult to calculate exactly, and yet it would be possible to get an accurate approximation.

Here is the exact problem:

250 people are each asked to toss a fair coin 10,000 times. Give an approximation with justification to the probability that at least four of them would have obtained exactly 5,000 heads and 5,000 tails.

Simulation-based answers will not be accepted.

Deadline: July 5, 2022

Student members of IMS are invited to submit solutions to bulletin@imstat.org (with subject "Student Puzzle Corner").

The names of student members who submit correct solutions, and the answer, will be published in the issue following the deadline.

The Puzzle Editor is Anirban DasGupta. His decision is final.

Solution to Puzzle 38

A reminder of the puzzle:

A tiger moves around a circular home territory of an unknown radius ρ, the circle being centered at a known point (x_0, y_0). Paw prints of the tiger have been detected at points (x_j, y_j), $j = 1, 2, \ldots, n$.

(a) Write a model for the problem.

(b) Find the MLE $\hat{\rho}$ of ρ under your model.

(c) Find, if it is possible, the exact distribution of the MLE in part (b).

(d) Find the asymptotic distribution of this MLE, i.e., find sequences a_n, b_n and a nondegenerate distribution G such that the distribution of $a_n(\hat{\rho} - b_n)$ converges in law to G.

Problem Corner Editor Anirban DasGupta explains the previous puzzle:

We assume as our model that the observed paw prints are uniformly distributed in the circle centered at (x_0, y_0) and with radius ρ. We may assume without loss of any generality that the center is the origin (0, 0). Then denoting the locations of the paw prints as $\mathbf{X_i}$, the MLE $\hat{\rho}$ of ρ is $\max(||\mathbf{X_i}||)$.

Its exact CDF is given by $P(\hat{\rho} \le \rho x) = x^{2n}$, $0 < x < 1$. Consequently, $\frac{n(\rho - \hat{\rho})}{\rho}$ converges in law to an exponential with mean $\frac{1}{2}$.

Obituary: Charles R. Mann

1941–2022

Charles Mann—president of Charles R Mann Associates in Washington, DC; ASA Fellow; and longtime IMS member—passed away on February 14, 2022, after a long illness.

In 1996, Charles was elected a fellow of ASA, "for excellence in the application of statistical methodology in the legal and regulatory communities; and for leadership in developing awareness and consideration of professional ethics in the practice of statistics." He had served on the ASA's ethics committee for over a decade and was instrumental in developing a permanent ethics code for the association

Charles, who was born March 27, 1941, held a BS in applied mathematics from Brooklyn's Polytechnic Institute, an MS in mathematical statistics from Michigan State, and a PhD in statistics from the University of Missouri. He was an instructor at the University of Maine, Orono, and an assistant professor in the department of statistics at The George Washington University. Before he opened his own firm, he headed and became a vice president of the statistical services division of Group Operations, Inc., in Washington, DC. He authored the entry on underutilization in the *Encyclopedia of Statistical Sciences.*

In 1977, Charles became founder and president of Charles R Mann Associates and was one of the pioneers in the provision of statistical services to legal practitioners in employment law. He participated in more than 100 seminars, workshops, and individual presentations to lawyers on various statistical applications and methodologies to be applied for proper statistical evaluation of employment discrimination claims. He also helped educate the legal profession to use multiple regression analysis to evaluate equal pay claims, and to use only statistically significant differences in application and/ or employment rates for establishing a prima facie case. In addition to providing lawyers with advice and reports on statistical analyses, Charles provided expert witness testimony in more than 160 cases, including major and landmark cases in a variety of legal arenas, and participated personally in settlement negotiations for several major national class action cases.

The Equal Employment Opportunity Act of 1972 first authorized the EEOC and private individuals to bring lawsuits under Title VII, which prohibits employment discrimination on the basis of race, sex, and national origin. In 1973, a nationwide class action lawsuit—*O'Bannon and EEOC v. Merrill Lynch, Pierce, Fenner & Smith, Inc.*—alleged Merrill Lynch discriminated against women applicants for a stockbroker position while the EEOC alleged discrimination based on race, sex, and national origin in all positions. Charles helped forge a defense for the Merrill Lynch lawyers, which resulted in an affirmative action consent decree that adopted Charles's unique statistical methodology for establishing goals and timetables for hiring minorities and women. This 'five-year plan' compares the percentage of minorities and women actually employed with the percentage in the 'comparable' workforce and then establishes goals and timetables when a statistically significant difference exists in the employment rate. This was a landmark settlement and set the standard for the brokerage industry.

Many early employment law cases were litigated by parties looking only at the number and percentages of minorities and women actually employed, versus their corresponding number and percentages in the civilian labor force. This was commonly referred to as the "any difference rule." For example, where a company had no women employed out of five electrical engineers compared to 20 percent of women in the labor force, a prima facie case of discrimination was established under the "any difference" rule. Charles was tireless in his attack on such uncritical thinking and incorrect methodology. He urged lawyers for both plaintiffs and defendants to focus on the "expected" numbers: to use statistics in a more refined way to ascertain whether the null hypothesis of nondiscrimination should be rejected.

Parallel with this work in employment discrimination litigation, Charles provided expertise in the original development of affirmative action programs for federal contractors and subcontractors. This longstanding Department of Labor program was established by Executive Order 11246 and administered by the Office of Federal Contract Compliance Programs (OFCCP). Among other regulations, the order requires government contractors and subcontractors to "… take affirmative action to [ensure] that applicants are employed, and that employee[s] are treated during employment, without regard to their race, color, religion, sex, or national origin." As enforcement increased, the secretary of labor approved an interpretation that authorized a rule requiring contractors to seek to achieve and maintain a percentage of women and minority workers exactly equal to their estimated availability in the external civilian workforce. Charles was first to recognize this as another version of the "any difference" rule in litigation and vigorously opposed it, waging nearly a one 'Mann' war with the

Continues on **page 17**

Charles R. Mann, 1941–2022
Continued from previous page

OFCCP to recognize statistical procedures to measure more accurately whether the differences were statistically significant.

The OFCCP then abandoned the "any difference" rule and adopted the 80 percent rule, which Charles likewise fought. That is, the percentage of minorities and women in the internal workforce had to be at least 80 percent of their corresponding availability in the external workforce. As Charles successfully educated the legal profession in using proper statistical analyses, it became clear there needed to be a sound statistical basis for taking affirmative action in setting goals and timetables for the employer to avoid direct violations of Title VII. This dispute led to the seminal case that vindicated Charles's views and can be seen as the crowning achievement in his career of advising the courts and legal profession in statistics in the employment context. *Firestone Synthetic Rubber & Latex Co. & Koppers Company, Inc. v F. Ray Marsha, et al., 507 F. Supp. 1330 (E.D. Tex. 1981)* was a declaratory judgment action brought to prevent the debarment of a contractor for, among other things, only declaring underutilization of minorities and women when their internal employment rate was statistically significantly less than their availability in the corresponding labor force (at the .05 level). Enforcement of the "any difference" rule was finally ended.

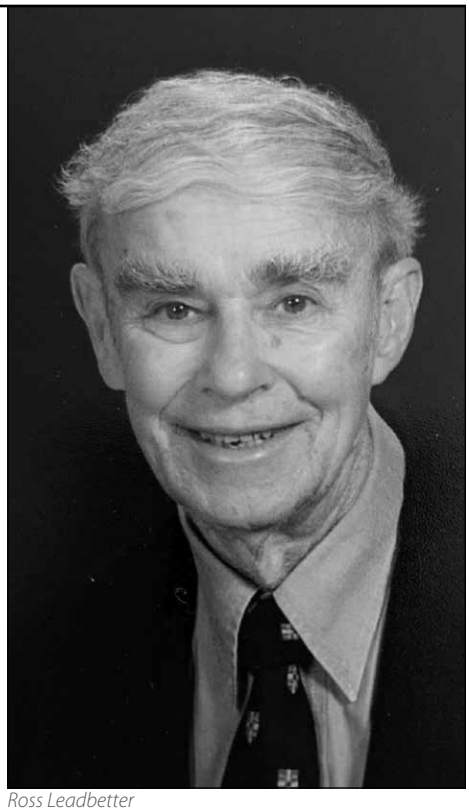
In addition, Charles's use of regression to analyze pay data was the first to be accepted by the Supreme Court in *Bazemore v. Friday*. That decision established the criteria courts now use to evaluate the reliability of regression analyses submitted in litigation and to justify affirmative action plans.

Charles was a highly esteemed mathematical statistician, responsible for the court's understanding and adopting statistical analyses and methodologies still recognized and used in a wide variety of cases today, benefiting lives by helping to establish rigorous and transparent statistical methods for accountability in the legal system.

***Lee-Ann C. Hayek**, Chief Mathematical Statistician and Senior Research Scientist, Smithsonian Institution, Washington DC*

Obituary: Ross Leadbetter

1931–2022


Ross Leadbetter

Malcolm Ross Leadbetter died on February 26, 2022, in Chapel Hill, North Carolina. He was 90 years old. During a career that spanned over 50 years, he was a major influence on generations of researchers, as a teacher, mentor, colleague, and friend. He will be dearly missed.

Ross was born on Christmas Eve, 1931. His mother was a teacher and homemaker, and his father was a high-school principal in his native town of Invercargill, New Zealand, and a world-class sprinter. He received an MSc degree (first class hons) in Mathematics from the University of Otago, New Zealand in 1954, a BA (Wrangler) from Cambridge University in 1958, (MA 1963), and his PhD from the University of North Carolina in 1963.

Ross worked for the New Zealand Applied Mathematics Laboratory in 1955–56 and the New Zealand Naval Research Laboratory in 1958–60. His first position in the US was at the Research Triangle Institute in North Carolina during 1961–66, where he worked as a mathematician. Ross was appointed Associate Professor with tenure at the Department of Statistics at the University of North Carolina, Chapel Hill, in 1966, and promoted to Full Professor in 1968. In the 1960s, it was unusual to

Continues on **page 18**

Ross Leadbetter, 1931–2022

Continued from previous page

get tenure at the time of hiring, but a competing offer from Yale prompted the UNC offer.

Throughout his career, Ross provided long-term statistical assistance to the US Environmental Protection Agency regarding environmental legislation, and worked for the US Navy on improving ship safety.

Together with Stamatis Cambanis and Gopinath Kallianpur, Ross ran the Center for Stochastic Processes in the University of North Carolina Statistics Department for more than two decades. The Center had a crucial impact on the careers of very many young researchers, including [*co-authors of this obituary*] HR who did research there for altogether two and a half years, and TH who wrote his thesis under Ross' guidance during the early years of the Center.

Ross received numerous accolades that honored his extraordinary achievements. He was a fellow of the ASA and IMS and an elected member of the ISI. He was awarded the 2011 IMS Carver Medal for his contributions to the 1994 Third World Congress at North Carolina, and for his service on the IMS Council and his editorial work. Last but not least, Ross received honorary doctorates from the University of Lund and the University of Lisbon.

Ross' research work was often guided by his interests in physics, ranging from quantum theory to the differential equations describing sea waves. Undoubtedly, his early experience at the New Zealand Naval Research Laboratory had an influence in that. Ross made central contributions to several areas of statistics, probability, and stochastic processes. In the beginning of the 1960s, together with G. S. Watson, Ross obtained seminal results on density and hazard rate function estimation, and, at the same time, made an excursion into renewal theory. However, his main passion was the extreme value theory for stochastic processes and random fields. Classical extreme value theory focused on independent data. Ross was among the first researchers to consider extremes for dependent sequences and processes. In particular, he developed the mixing theory for extremes of stationary processes, showing that much weaker dependence conditions than Rosenblatt's strong-mixing condition in central-limit theory was sufficient for studying the asymptotic theory of extreme values. Later, he further characterized the role of local dependence by introducing the notion of "extremal index" to describe the amount of local clustering of extreme values and the resulting change to the asymptotic distribution of maxima. The extremal index has become a fundamental tool in the theory and statistical analysis of extreme values, and the development of novel inference approaches based on the extremal index continue to be an important topic for the research of extremes today. Ross also introduced point processes as a major tool for studying the properties of extremes and along the way he contributed to point process theory itself.

Ross coauthored three books, on stationary processes, with H. Cramér; on extreme values of stationary processes, with G. Lindgren and HR; and on the basic theory of measure and probability with S. Cambanis and V. Pipiras. These books have inspired generations of students and researchers in probability and statistics and continue to be influential. Ross' writing exemplified excellence in communicating mathematical ideas. His writing is crisp and focused, reflecting his uncanny ability to remove extraneous details and get right to the core of problems. On the other hand, he would always proceed at a comfortable pace and provided ample motivations and explanations so that the reader is not lost in the mathematical abstraction. Most importantly, the clear, simple language that he used eases the anxiety that any reader might have in reading theoretical work.

Ross married Winsome Wallace of Oamaru, New Zealand, in 1955. In an email the day after his death, Winsome wrote, "We have been together for a very long time — 67 years of marriage and 4 years dating before that. It has been a long and wonderful journey together." They have four children, 10 grandchildren and five great-grandchildren. Ross' personal interests included playing the Appalachian dulcimer, folk dancing, and collecting antique scales.

After Ross' passing, we wrote with several of Ross' acquaintances. Reading their reflections, the first few words that come to mind that best describe Ross are *generous, unassuming,* and *witty*. Indeed, Ross was a very special friend who touched our lives and left us with many happy memories.

We miss him very much.

*Written by **Tailen Hsing**, University of Michigan, Ann Arbor, and **Holger Rootzén**, Chalmers University of Technology*

Parts of the material for this obituary were taken from an interview with Ross, by Tailen Hsing and Holger Rootzén, published in 2015 in the journal *Extremes:* https://link.springer.com/article/10.1007/s10687-015-0225-1

Recent papers: supported and affiliated journals

Annales de l'Institut Henri Poincaré (B), Probabilités et Statistiques

The Probability and Statistics section of the *Annales de l'Institut Henri Poincaré* is an international journal that publishes high-quality research papers. The journal, supported by the IMS, deals with all aspects of modern probability theory and mathematical statistics, and their applications. The editors are Giambattista Giacomin and Yueyun Hu. Access papers at **https://projecteuclid.org/aihp**

Volume 58, Number 1, February 2022

Observational Studies

Observational Studies, an IMS affiliated journal, is an open-access, peer-reviewed journal that publishes manuscripts on all aspects of observational studies, including study protocols, methodologies, descriptions of data sets, software and analyses of observational studies. The editor is Nandita Mitra. Read it at **http://obs.pennpress.org/**

Volume 7, Issue 2, 2021

IMS meetings around the world

Joint Statistical Meetings

2022 Joint Statistical Meetings
August 6–11, 2022. Washington DC
w https://ww2.amstat.org/meetings/jsm/2022/
Registration and housing reservations are open. Early registration deadline May 31, 2022. The statistical event of the summer, JSM, is in DC this year. Join us August 6–11 to meet new people, talk to old friends, and explore the nation's capital.

AUGUST 6–11
2022
WASHINGTON, DC
JSM
STATISTICS: A FOUNDATION FOR INNOVATION

JSM dates for 2023–2026

IMS Annual Meeting @ JSM 2023	JSM 2024	IMS Annual Meeting @ JSM 2025	JSM 2026
August 5–10, 2023	August 3–8, 2024	August 2–7, 2025	August 1–6, 2026
Toronto, Canada	Portland, Oregon, USA	Nashville, TN, USA	Boston, MA, USA

22nd Meeting of New Researchers in Statistics and Probability
August 3–6, 2022
George Mason University, Fairfax, VA (close to Washington DC)
w https://imstat.org/nrc2022/
The IMS New Researchers Group excited to resume this in-person conference, taking place as usual immediately before JSM (which is in Washington DC, August 6–11, 2022).
All new faculty, or soon-to-be faculty, in statistics, probability and data science (i.e. you received your PhD in or since 2015, or expect to by the end of this year) are encouraged to apply **by April 15**: see website for form.

South East Probability Conference (the second one in 2022)
August 8–9, UNC Chapel Hill
w https://services.math.duke.edu/~rtd/SEPC2022/SEPC2022.html
There are *two* 2022 Southeastern Probability Conferences this year, both in-person meetings. The second SEPC in August at UNC Chapel Hill features Julia Gaudio (Northwestern, IE and MS), Jiaoyang Huang (NYU), Hye-Won Kang (U of Maryland), Annie Katsevich (NYU), Nicholas Lancier (Arizona State), Elizaveta Rebrova (Princeton ORFE), Sebastien Roch (Wisconsin), and Philippe Sosoe (Cornell). For the second meeting, graduate students and postdocs can apply for support. Details forthcoming.

2022 IMS Annual Meeting
June 27–30, 2022. London, UK
w www.imsannualmeeting-london2022.com
The 2022 IMS Annual Meeting will be held in London immediately before COLT, with extra one-day workshop planned [*see announcement, right*] between the two meetings. **Registration for the IMS–COLT workshop is included in your fee.** Program and Local Chair: Qiwei Yao.

2022 IMS–COLT Joint Workshop
July 1, 2022. London, UK
w https://bguedj.github.io/colt-ims-2022.github.io/
The 2022 IMS Annual Meeting [*see left*] will be immediately followed by the first IMS–COLT joint workshop, a one-day meeting in a hybrid format (on-site in central London, and online), linking the IMS and COLT communities of researchers. (COLT is the annual Conference on Learning Theory, and will take place in 2022 immediately after this IMS–COLT workshop day.) **If you're registered for the IMS Annual Meeting, this meeting is included.**

At a glance: forthcoming IMS Annual Meeting and JSM dates

2022

IMS Annual Meeting: London, UK, **June 27–30, 2022**

JSM: Washington DC, **August 6–11, 2022**

2023

IMS Annual Meeting @ JSM: Toronto, **August 5–10, 2023**

2024

IMS Annual Meeting/ 11th World Congress: Bochum, Germany, **August 12–16, 2024**

JSM: Portland, OR, **August 3–8, 2024**

2025

IMS Annual Meeting @ JSM: Nashville, TN, USA, **August 2–7, 2025**

2026

IMS Annual Meeting: TBD

JSM: Boston, MA, **August 1–6, 2026**

More IMS meetings

2022 Workshop on Statistical Network Analysis and Beyond (SNAB2022)

NEW

August 3–5, 2022, in New York, USA

w https://yangfeng.hosting.nyu.edu/snab2022/

The 2022 Workshop on Statistical Network Analysis and Beyond (SNAB2022) will be held on August 3-5, 2022, and will be hosted by the NYU School of Global Public Health, Department of Biostatistics.

We are bringing together researchers on network analysis and beyond to exchange ideas and recent works through this workshop. The workshop will cover topics including analysis of social networks and biological networks, tensor analysis, and deep learning.

The tentative list of invited speakers is: Arash Amini (University of California at Los Angeles); David Choi (Carnegie Mellon University); Jianqing Fan (Princeton University); Tracy Ke (Harvard University); Eric Kolaczyk (Boston University); Liza Levina (University of Michigan); Rajarshi Mukherjee (Harvard University); Carey Priebe (Johns Hopkins University); Daniel Sewell (University of Iowa); Ali Shojaie (University of Washington); Hai Shu (New York University); Weijing Tang (University of Michigan); Haolei Weng (Michigan State University); Cui-Hui Zhang (Rutgers University); and Emma Zhang (University of Miami).

The registration fee is $150 (regular) and **free** for students. Registration link coming soon on the website.

BNP13: the 13th Conference on Bayesian Nonparametrics

October 24–28, 2022 in Puerto Varas, Chile

w https://midas.mat.uc.cl/bnp13/

This meeting aims to gather in Chile leading experts in this already consolidated and rapidly expanding field for a full week of plenary, invited, contributed and poster talks, reflecting the many and varied aspects of the theoretical, methodological, and applied work in the discipline. We also expect to attract many young researchers to the event, especially those residing in South America and in Chile. The event features three keynote lectures (free topic), invited and contributed sessions, spanning all the wide spectrum of theory, methodology and applications of Bayesian methods from the nonparametric viewpoint: asymptotics, advanced computation, robustness, inference in high-dimensional settings, deep learning, machine learning, uncertainty quantification, clustering and applications.

2022 IMS International Conference on Statistics and Data Science (ICSDS)

December 13–16, 2022

Florence, Italy

w https://sites.google.com/view/icsds2022

The first IMS International Conference on Statistics and Data Science (ICSDS) is to be held in Florence, Italy, from December 13–16, 2022. The objective of ICSDS is to bring together researchers in statistics and data science from academia, industry and government in a stimulating setting to exchange ideas on the developments in modern statistics, machine learning, and broadly defined theory, methods and applications in data science. The conference will consist of plenary sessions, and about 50 invited, contributed and poster sessions. **Young researchers are particularly encouraged to participate**, with a portion of the invited sessions designated for them.

JOINT IMS–COLT WORKSHOP: JULY 1, 2022, LONDON

w https://bguedj.github.io/colt-ims-2022.github.io/

For the first time, the IMS Annual Meeting and COLT are co-located in London in 2022, with the IMS Annual Meeting happening on June 27–30 and COLT on July 2–5. There will be a joint one-day workshop between the two conferences, on July 1, to offer a chance to the COLT and IMS audiences to mingle and engage on topics related to statistics and learning theory.

All registered attendees to the IMS Annual Meeting or to COLT are automatically registered for this joint workshop. Join us in London!

The speakers are Emmanuel Candès, Nati Srebro and Vladimir Vovk for tutorials and talks, on the topics of conformal prediction and mathematics of deep learning. The workshop will close with a social event to give IMS and COLT participants a chance to mingle.

Organizers: Benjamin Guedj, Inria (France) and UCL (UK), Peter Grünwald, CWI and Leiden University (Netherlands), Ciara Pike-Burke, Imperial College London (UK), and Susan Murphy, Harvard (USA).

This event is supported by IMS and COLT.

More IMS meetings around the world

Asia-Pacific Seminar in Probability and Statistics: Ongoing and online

w https://sites.google.com/view/apsps/home

The Asia-Pacific Seminar in Probability and Statistics (APSPS) is a monthly online seminar, broadcast on a mid-month Wednesday via Zoom. The seminar series was created as a permanent forum for good research in the field. Topics include: probabilistic models for natural phenomena, stochastic processes and statistical inference, statistical problems in high-dimensional spaces, asymptotic methods, statistical theory of diversity. The organizers — Sanjay Chaudhuri (NUS, Singapore), Mark Holmes (University of Melbourne, currently at UBC, Vancouver), Estate Khmaladze (VUW, Wellington; Chair), Krishanu Maulik (ISI, Kolkata), Spiro Penev (UNSW, Sydney), Masanobu Taniguchi (Waseda University, Tokyo), Lijiang Yang (Tsinghua University, Beijing), and Nakahiro Yoshida (University of Tokyo) — seek an emphasis on novelty, beauty, and clarity. Presentations are intended to be accessible to good postgraduate students in probability and mathematical statistics.

If you are interested in receiving email announcements about the next speakers, send an email to any of the Board members listed above.

Statistics in the Big Data Era

June 1–3, 2022

UC Berkeley, CA, USA

w https://simons.berkeley.edu/workshops/statistics-big-data-era

This conference is focused on the changing role and nature of the discipline of statistics in the time of a data deluge in many applications, and increasing success of artificial intelligence at performing many data analysis tasks. The conference aims to bring together experts in statistical methodology and theory for complex and big data with researchers focused on a range of applications, from genomics to social networks, and to provide opportunities for new researchers to learn about both emerging methods and applications. The conference will also be an occasion to celebrate Professor Peter Bickel's 80th birthday.

2024 IMS annual meeting

Bernoulli–IMS 11th World Congress in Probability and Statistics

August 12–16, 2024

Ruhr-University Bochum, Germany

w TBC

ENAR/IMS Spring Meeting

March 22–25, 2023.

Nashville, TN, USA

w https://enar.org/

Stochastic Networks

June 20–24, 2022. Cornell Univ., Ithaca, NY

w https://sites.northwestern.edu/snc2022/

Stochastic networks is a multifaceted area of research concerned with the modeling, stability, control, performance, approximation, and design of stochastic networks. It gives rise to challenging and subtle mathematical problems, whose solution often requires a combination of ideas and techniques from several branches of mathematics, including probability theory, stochastic processes, analysis, optimization, algorithms, combinatorics, and graph theory. Research in this area is strongly motivated by applications in diverse domains, ranging from telecommunications and manufacturing to service operations, biological and social networks, revenue management, and health care. The conference series, initiated in 1987 and held biennially, is a major forum for researchers to learn of the latest developments and new research directions in stochastic networks.

2022 WNAR/IMS/JR Annual Meeting

VIRTUAL. June 10–15, 2022

w https://wnarofibs.wildapricot.org/WNAR2022

Due to the ongoing COVID-19 pandemic, the 2022 WNAR/IMS/JR meeting will be held virtually. **Registration is open.** The program features Short Courses (June 10-11) on Veridical Data Analysis and Clinical Development of New Drugs; Invited Oral Sessions, Contributed Oral Sessions, and Student Paper Sessions (June 13–15); and the Presidential Invited Address (June 14). Nicholas Jewell, UC Berkeley and London School of Hygiene and Tropical Medicine will be the presidential invited speaker. The title and abstract of his talk will be announced shortly. The abstract submission deadline has passed.

One World ABC Seminar: Ongoing and online

w https://warwick.ac.uk/fac/sci/statistics/news/upcoming-seminars/abcworldseminar

The One World Approximate Bayesian Computation (ABC) Seminars are fortnightly seminars that take place via Zoom on Thursdays at 11:30am, UK time. The idea is to gather members and disseminate results and innovation during these weeks and months under lockdown. Register to receive the webinar link via email. The organizers welcome proposals for future talks. This webinar is part of the larger One World seminar initiative [*see below*].

One World Probability Seminar (OWPS): Ongoing and online

w https://www.owprobability.org/one-world-probability-seminar/future-seminars

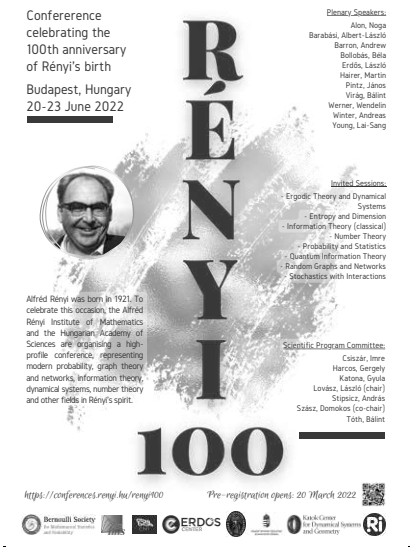
Thursdays, 14:00 UTC/GMT. Please subscribe to the mailing list for updates about the upcoming seminars and other events: https://www.owprobability.org/mailing-list

Conference celebrating 100th anniversary of Rényi's birth
June 20–23, 2022
Budapest, Hungary
w https://conferences.renyi.hu/renyi100

Alfréd Rényi was born on the 20th of March 1921. To celebrate this occasion, the Alfréd Rényi Institute of Mathematics and the Hungarian Academy of Sciences are organising a high-profile conference, representing modern probability, graph theory and networks, information theory, dynamical systems, number theory and other fields in Rényi's spirit, i.e., not respecting strictly the borders between these and possibly other areas of pure and applied mathematics.

The conference will take place **June 20–23, 2022** (having been postponed from 2021 due to the pandemic) in Budapest, Hungary.

We invite posters to be presented during the conference. The deadline for all submissions is **8 May 2022**. Students can apply for a waiver of the registration fee: see https://conferences.renyi.hu/renyi100/registration-fee.



Other meetings around the world

Symposium on Risks and Opportunities of AI in Clinical Drug Development
July 6, 2022, in Portland, Maine, USA
w https://roux.northeastern.edu/aipm/

The Symposium on Risks and Opportunities of AI in Clinical Drug Development is co-sponsored by the ASA, Pfizer Inc., Northeastern University, Columbia University, and OHDSI.

Hosted by the Roux Institute at Northeastern University, the symposium is a one-day conference—taking place June 6 in Portland, Maine—and features speakers from the FDA, industry, and academia. You have the option to attend in person or virtually.

This event is designed to serve as a platform for distinguished statisticians, data scientists, regulators, and other professionals to address the challenges and opportunities of AI in pharmaceutical medicine; to foster collaboration among industry, academia, regulatory agencies, and professional associations; and to propose recommendations with policy implications for proper implementation of AI in promoting public health.

As a convener of researchers in the fields of AI, data science, biotechnology, computational medicine, and more, industry partners, academic faculty, and entrepreneurs, the Roux Institute at Northeastern University is uniquely positioned to host this event.

IMSI Upcoming Programs
w https://www.imsi.institute/programs/

The Institute for Mathematical and Statistical Innovation (IMSI) is a mathematical sciences research institute funded by the NSF. It is managed by the University of Chicago, Northwestern University, the University of Illinois at Chicago, and the University of Illinois at Urbana-Champaign, and is hosted at the University of Chicago.

The upcoming long programs (details and application via the link above) are:

- **Confronting Global Climate Change,** September 19–December 9, 2022
- **Interdisciplinary and Critical Data Science Motivated by Social Justice,** January 9–February 3, 2023
- **Mathematics, Statistics, and Innovation in Medical and Health Care,** March 27–June 2, 2023
- **Algebraic Statistics and Our Changing World: New Methods for New Challenges,** September 18–December 15, 2023
- **Data-Driven Materials Informatics: Statistical Methods and Mathematical Analysis,** March 4–May 24, 2024

Employment Opportunities

Chile: Santiago

Universidad Mayor, Faculty of Science, Engineering and Technology

Up to 5 tenure track positions in Statistics, Machine Learning or Data Science

https://jobs.imstat.org/job//62586555

China: Hong Kong

The University of Hong Kong

Tenure-Track Professor/Associate Professor/Assistant Professor in Business Analytics (several posts)

https://jobs.imstat.org/job//62033043

Denmark: Aarhus

The Biological and Chemical Engineering Department, Aarhus University

Two Associate Professor/Tenure Track Assistant Professor positions in Selected Areas of Mathematical Economics, Statistics and Data Science

https://jobs.imstat.org/job//62453260

Singapore

Yale-NUS

Lecturer in Mathematics, Computer Science, and Data Science

https://jobs.imstat.org/job//63038496

United Kingdom: London

Imperial College London

Chair or Readership in Statistics

https://jobs.imstat.org/job//63116411

United Kingdom: London

Imperial College London

Lecturer/Senior Lecturer in Statistics

https://jobs.imstat.org/job//63211658

United Kingdom: London

Imperial College London

Chair or Readership in Statistics

https://jobs.imstat.org/job//63138194

United States: Tempe, AZ

Arizona State University - School of Mathematical & Statistical Sciences

Presidential Postdoctoral Fellowship in Mathematical Biology

https://jobs.imstat.org/job//62388302

United States: Berkeley, CA

University of California, Berkeley Department of Statistics

Lecturer - Statistics - Department of Statistics - Division of Computing, Data Science and Society

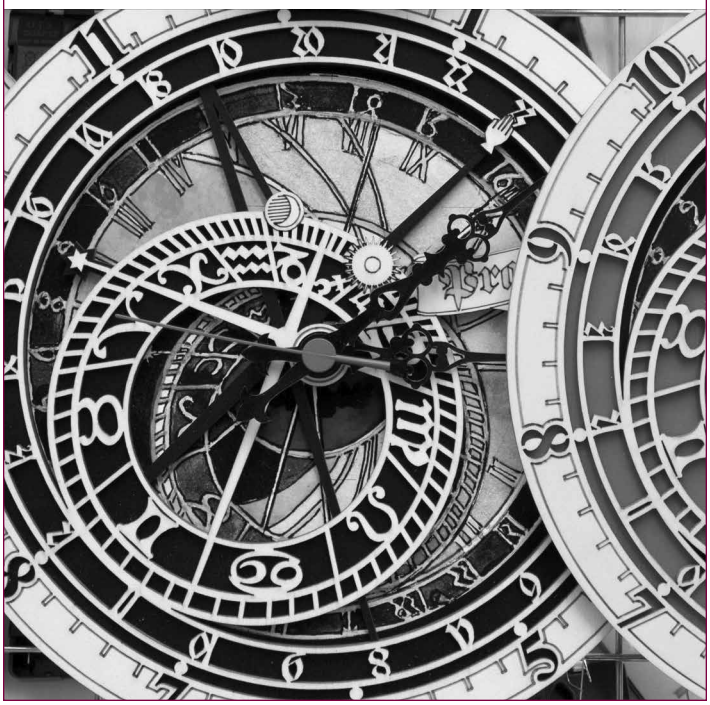
https://jobs.imstat.org/job//62592386

United States: Bloomington, IN

IU School of Public Health

Chair of the Department of Kinesiology

Https://jobs.imstat.org/job//61396763



International Calendar of Statistical Events

IMS meetings are highlighted in maroon with the IMS logo, and new or updated entries have the NEW or UPDATED symbol. Please submit your meeting details and any corrections to Elyse Gustafson: ims@imstat.org

At the time of writing, some meetings are known to be POSTPONED or canceled. Where new dates are known, they are included here. Some meetings, marked ONLINE, are offering a virtual format. Please check meeting websites for updates.

Online and Ongoing

ONLINE IMS **Asia-Pacific Seminar in Probability and Statistics** w https://sites.google.com/view/apsps/home

ONLINE IMS **COPSS–NISS COVID-19 Data Science Webinar series** w https://www.niss.org/copss-niss-covid-19-data-science-webinar-series

ONLINE IMS **One World ABC Seminar** w https://warwick.ac.uk/fac/sci/statistics/news/upcoming-seminars/abcworldseminar

ONLINE IMS **One World Probability Seminar** w https://www.owprobability.org/one-world-probability-seminar

ONLINE IMS **One World YoungStatS Webinar series** w https://youngstats.github.io/categories/webinars/

ONLINE **Video series:** *The Philosophy of Data Science* w https://www.podofasclepius.com/philosophy-of-data-science

June 2022

IMS June 1–3: Berkeley, USA. **Statistics in the Big Data Era** w https://simons.berkeley.edu/workshops/statistics-big-data-era

IMS June 10–15: Online. 2022 WNAR/IMS/JR Annual Meeting w https://wnarofibs.wildapricot.org/WNAR2022

June 13–17: Charlottesville, VA, USA. **Ethical Challenges of AI in Biomedicine** w http://innovation.lab.virginia.edu/

June 14–18: Paphos, Cyprus. **International Symposium on Nonparametric Statistics, ISNPS** w http://cyprusconferences.org/isnps2022/

NEW June 16: A Coruña, Spain. **International Symposium on Recent Advances in Statistics, in honor of Ingrid Van Keilegom** w http://dm.udc.ed/symposium_2022/

IMS June 20–23: Budapest, Hungary. **Rényi 100: celebrating 100 years since Rényi's birth** w https://conferences.renyi.hu/renyi100

June 20–23: Timisoara, Romania. **23rd Conference of the Romanian Society of Probability and Statistics** w https://spsr.ase.ro/conferinta-nationala-spsr/

June 25–July 1: Montreal, Canada. **ISBA World Meeting 2022** w https://isbawebmaster.github.io/ISBA2022

IMS June 27–30: London, UK. **IMS Annual Meeting** w www.imsannualmeeting-london2022.com

Image: freepik.com/vwalakte

IMS June 27–July 1: Wuhan, China. **Stochastic Processes and their Applications** w http://spa2022.whu.edu.cn

June 27–July 1: Darwin, Australia. **Joint Southern Statistical Meetings (JSSM2022)** w https://statsoc.org.au/event-3529236

July 2022

IMS July 1: London, UK. **IMS–COLT one-day workshop** (between IMS meeting and COLT meeting) w https://bguedj.github.io/colt-ims-2022.github.io/

July 10–15: Riga, Latvia. **XXXI International Biometric Conference (IBC2022)** w www.biometricsociety.org/meetings/conferences

POSTPONED ~~July 18–22: Moscow, Russia. 33rd European Meeting of Statisticians w https://ems2022.org/~~

August 2022

August 2–13: Campinas, Brazil. **São Paulo School of advanced science on singular stochastic partial differential equations and their applications** w https://www.ime.unicamp.br/spas2022/

Continues on page 26

International Calendar *continued*

August 2022 continued

NEW ims August 3–5: New York, USA. 2022 Workshop on Statistical Network Analysis and Beyond (SNAB2022) **w** https://yangfeng.hosting.nyu.edu/snab2022/

ims August 3–6: George Mason University, VA, USA. 22nd Meeting of New Researchers in Statistics and Probability **w** https://imstat.org/nrc2022/

ims August 6–11: Washington DC, USA. **JSM 2022** **w** https://ww2.amstat.org/meetings/jsm/2022/

ims August 8–9: UNC Chapel Hill, USA. South East Probability Conference (2 of 2) **w** https://services.math.duke.edu/~rtd/SEPC2022/SEPC2022.html

August 21–25: Newcastle, UK. **International Conference for Clinical Biostatistics** **w** http://www.iscb.info/

September 2022

September 7–10: UC Santa Cruz, CA, USA. **O'Bayes 2022** **w** https://obayes.soe.ucsc.edu/

September 12–15: Aberdeen, UK. **RSS International Conference** **w** https://rss.org.uk/training-events/conference2022/

October 2022

ims October 24–28: Puerto Varas, Chile. **BNP13: Bayesian Nonparametrics** **w** https://midas.mat.uc.cl/bnp13/

December 2022

ims December 13–16: Florence, Italy. **IMS International Conference on Statistics and Data Science (ICSDS)** **w** https://sites.google.com/view/icsds2022

December 18–20: Hong Kong. **ICSA International Conference** **w** https://www.icsa.org/12th-icsa-international-conference-december-18-20-2022/

January 2023

ims January dates TBC (postponed from January 2022): Melbourne, Australia. **IMS Asia Pacific Rim Meeting (IMS-APRM2021)** **w** http://ims-aprm2021.com/

July 2023

July 15–20: Ottawa, Canada. **ISI World Statistics Congress** **w** https://www.isi2023.org/

August 2023

ims August 5–10: Toronto, Canada. **IMS Annual Meeting at JSM 2023** **w** http://www.amstat.org/ASA/Meetings/Joint-Statistical-Meetings.aspx

July 2024

Dates TBC: Venice, Italy. **ISBA World Meeting 2024** **w** https://bayesian.org/2024-world-meeting/

August 2024

ims August 3–8: Portland, OR, USA. **JSM 2024** **w** http://www.amstat.org/ASA/Meetings/Joint-Statistical-Meetings.aspx

ims August 12–16: Bochum, Germany. **Bernoulli/IMS World Congress in Probability and Statistics** **w** TBC

August 2025

ims August 2–7: Nashville, TN, USA. **IMS Annual Meeting at JSM 2025** **w** http://www.amstat.org/ASA/Meetings/Joint-Statistical-Meetings.aspx

August 2026

ims August 1–6: Boston, MA, USA. **JSM 2026** **w** http://www.amstat.org/ASA/Meetings/Joint-Statistical-Meetings.aspx

Membership and Subscription Information: 2022

Journals

The scientific journals of the Institute of Mathematical Statistics are *The Annals of Statistics*, *The Annals of Probability*, *The Annals of Applied Statistics*, *The Annals of Applied Probability*, and *Statistical Science*. The *IMS Bulletin* is the news organ of the Institute.

Individual Memberships

Each individual member receives the *IMS Bulletin* (print and/or electronic) and may elect to receive one or more of the five scientific journals. Members pay annual dues of $105. An additional $120 is added to the dues of members for each scientific journal selected ($77 for *Stat Sci*). **Reduced membership dues** are available to full-time students, new graduates, permanent residents of countries designated by the IMS Council, and retired members.

Individual and General Subscriptions

Subscriptions are available on a calendar-year basis. **Individual subscriptions** are for the personal use of the subscriber and must be in the name of, paid directly by, and mailed to an individual. Individual subscriptions for 2022 are available to *The Annals of Applied Probability* ($235), *The Annals of Applied Statistics* ($235), *The Annals of Probability* ($235), *The Annals of Statistics* ($235), *Statistical Science* ($192), and *IMS Bulletin* ($115). **General subscriptions** are for libraries, institutions, and any multiple-readership use. Institutional subscriptions for 2022 are available to *The Annals of Applied Probability*, *The Annals of Applied Statistics*, *The Annals of Probability*, and *The Annals of Statistics* (each title $536 online only / $649 print+online), *Statistical Science* ($307/$370), and *IMS Bulletin* ($153 print). Airmail delivery is no longer offered.

IMS Bulletin

The *IMS Bulletin* publishes articles and news of interest to IMS members and to statisticians and probabilists in general, as well as details of IMS meetings and an international calendar of statistical events. Views and opinions in editorials and articles are not to be understood as official expressions of the Institute's policy unless so stated; publication does not necessarily imply endorsement in any way of the opinions expressed therein, and the *IMS Bulletin* and its publisher do not accept any responsibility for them. The *IMS Bulletin* is copyrighted and authors of individual articles may be asked to sign a copyright transfer to the IMS before publication.

The *IMS Bulletin* (ISSN 1544-1881) is published eight times per year, in January/February, March, April/May, June/July, August, September, October/November and December, by the Institute of Mathematical Statistics, 9760 Smith Rd, Waite Hill, Ohio 44094, USA. Periodicals postage paid at Cleveland, Ohio, and at additional mailing offices. Postmaster: Send address changes to 9760 Smith Rd, Waite Hill, Ohio 44094, USA or dues.subs@imstat.org. Printed by The Sheridan Press, 450 Fame Avenue, Hanover, PA 17331, USA.

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Advertising job vacancies: A single 60-day online job posting costs just $329.00. We will also include the basic information about your job ad (position title, location, company name, job function and a link to the full ad) in the *IMS Bulletin* at no extra charge. See https://jobs.imstat.org

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Deadlines and mailing dates for *IMS Bulletin*

Issue	Deadline	Online by	Mailed
1: January/February	**December 1**	December 15	January 1
2: March	**February 1**	February 15	March 1
3: April/May	**March 15**	April 1	April 15
4: June/July	**May 1**	May 15	June 1
5: August	**July 1**	July 15	August 1
6: September	**August 15**	September 1	September 15
7: Oct/Nov	**September 15**	October 1	October 15
8: December	**November 1**	November 15	December 1

the next issue is

August 2022

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DEADLINES for submissions

July 1, then **August 15**

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Articles

Continued on back cover

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