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The members' magazine of the Institute of Mathematical Statistics

IMS Bulletin

March 2023

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# ICSDS "a huge success"

## ICSDS 2023 will be in Lisbon, Portugal: Join Us!

Regina Liu and Annie Qu were the Co-organizers for the 2022 **International Conference on Statistics and Data Science** meeting. They write: We are delighted to report that the inaugural ICSDS (International Conference on Statistics and Data Science), held in December 13–16 in Florence, Italy, was a huge success.

There were nearly 500 participants from more than 35 countries, ranging from students, to junior, mid-career and senior researchers and practitioners, affiliated with industry, government, and academia and covering broad areas of statistics and data science. The scientific program had four plenary sessions, 58 invited sessions, six contributed sessions. There was also a student travel award session and a poster session with 60 contributed posters.

Despite the alluring touristic attractions in Florence, the conference had strong attendance, even up to the last day of the conference. This, in addition to numerous positive comments conveyed to us, clearly attested to the quality of the conference program. The session topics were diverse and far-reaching, ranging from new machine learning methods and computing tools, to personalized medicine and genetics, big data visualization and graphics, network data, image and text data, electronic health records data, health policies and environmental statistics. Several sessions were so popular that some audience members had to sit on the floor.

*Continues on* **page 4**

*The conference banquet was held in the sumptuous surroundings of the Palazzo Vecchio*

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## Executive Committee





# IMS Members' News

### International Biometric Society bestows Honorary Life Memberships

The International Biometric Society (IBS) has elevated IMS Fellow **Lynne Billard** to Honorary Life Membership status. A past IBS President, Lynne Billard was honored for her work in fostering connections between the IBS Regions and the parent organization, her efforts to promote the advancement of women and other professionals from marginalized populations, and tireless efforts on behalf of the IBS and ENAR for nearly five decades.

Also recognized with Honorary IBS Life Membership status were **Elizabeth Thompson** and **Jean-Louis Foulley**. Past IBS President Elizabeth Thompson was honored for her research in statistical genetics and pedigree analysis, with influential works spanning across several decades, and for her active involvement in the IBS since the 1970s, culminating in her election to serve as Society President from 2016–17. Jean-Louis Foulley was selected for always seeking the practical applications of his work, for his influence and involvement within the French Biometric Society, and for his enthusiasm while serving in several key editor and scientific program roles for the Society, including the Dublin and Florianopolis International Biometric Conferences.

### Dipak Dey wins IISA Lifetime Achievement Award for 2022

Professor **Dipak Dey** from University of Connecticut has been selected to receive the International Indian Statistical Association's Lifetime Achievement Award. This award recognizes distinguished members of the association who represent "models of excellence" to IISA members. Specifically, the award recognizes outstanding contributions to the theory, methods and application of statistics including probability, data science and technology (research, innovation, and leadership) by IISA members, including India Chapter members. The award also recognizes innovative contribution to the statistics profession through significant impact on matters of societal concern on health, safety, environment, economic development and welfare. This award is the highest professional award conferred on its members by IISA.


*Dipak Dey*

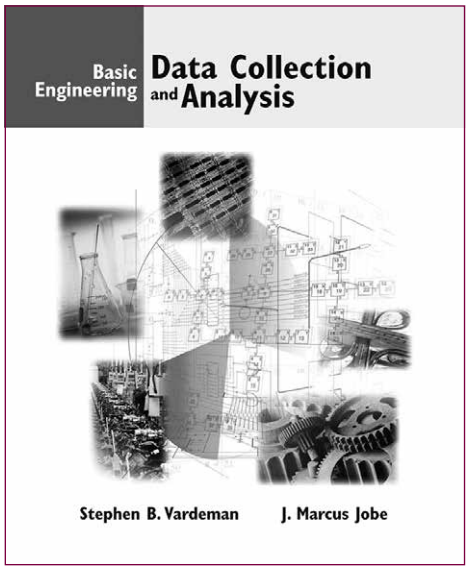
### Lydia Suzanne Gibson wins ASA travel award

IMS member **Lydia Suzanne Gibson** was among the winners of the American Statistical Association's travel awards, covering their registration and travel in order to attend the ASA Conference on Statistical Practice (https://ww2.amstat.org/meetings/csp/2023/) which took place in San Francisco from February 2–4, 2023. Lydia won the Lingzi Lu Memorial Award, which was created by the ASA in partnership with the International Chinese Statistical Association in remembrance of Lingzi Lu, the first-year student in the statistics master's program at Boston University who lost her life in the bombing at the Boston Marathon in April of 2013.


*Lydia Suzanne Gibson*

Lydia Suzanne Gibson is a master's student in statistics at California State University, East Bay. She co-founded the CSU East Bay's student chapter of the ASA and advocates for students to become involved in, or start their own, student chapter.

## Free open access engineering statistics book




**Stephen B. Vardeman** (Emeritus University Professor of Statistics and of Industrial and Manufacturing Systems Engineering, Iowa State University), together with **J. Marcus Jobe** (Farmer School of Business, Miami University) have made freely available their open-source, high quality engineering statistics text in PDF. The book *Basic Engineering Data Collection and Analysis* by Vardeman and Jobe, originally published by Duxbury / Thompson Learning / Cengage is now available for download under a CC BY-NC-SA 4.0 International license through the Iowa State University Digital Press. It can be found at https://www.iastatedigitalpress.com/plugins/books/127/ and has been assigned the DOI https://doi.org/10.31274/isudp.2023.127.

This book is essentially a revision/second edition of *Statistics for Engineering Problem Solving* by Vardeman that won the American Society for Engineering Education 1994 Meriam/Wiley Distinguished Author award, given biennially for an outstanding new engineering text. The book has answers for end-of-section exercises. All datasets in the book are on the web page in digital form. Chapter formula sheets are on the web page. The text's solutions manual for the end-of-chapter exercises is currently being processed for posting and will appear in due course. There are plans underway to produce and post a supplement giving R code and output for the book's examples.

Professors Vardeman and Jobe offer this book in the hope that it proves useful to many instructors and engineering students for years to come.

## IBS/CWS Florence Nightingale Award to Colleen Chan

The International Biometric Society (IBS) and Caucus for Women in Statistics (CWS) instituted the Florence Nightingale Award, which was first awarded in 2020 during the 200th anniversary of Florence Nightingale's birth. The award will be presented during every International Biometric Conference (IBC) year—these are every two years, next in Buenos Aires in early December, 2024. The Florence Nightingale Award is given to the most outstanding eligible candidate who was selected for an IBC 2022 oral presentation and has demonstrated exceptional scholarship. Candidates who have a record of service and care for the cause of women, and other honorable causes that raise the standing of disadvantaged groups in the profession, as evidenced by their application, will be viewed favorably. This year's winner is **Colleen Chan**, Yale University, USA, for her talk titled *Nonparametric estimation of the Potential Impact Fraction and the Population Attributable Fraction with individual-level and aggregated data*.


Colleen Chan

= access published papers online

### IMS Journals and Publications

*Annals of Statistics:* Enno Mammen, Lan Wang
https://imstat.org/aos
https://projecteuclid.org/aos

*Annals of Applied Statistics:* Ji Zhu
https://imstat.org/aoas
https://projecteuclid.org/aoas

*Annals of Probability:* Christophe Garban, Alice Guionnet
https://imstat.org/aop
https://projecteuclid.org/aop

*Annals of Applied Probability:* Kavita Ramanan, Qiman Shao: https://imstat.org/aap
https://projecteuclid.org/aoap

*Statistical Science:* Sonia Petrone
https://imstat.org/sts
https://projecteuclid.org/ss

*IMS Collections*
https://projecteuclid.org/imsc

*IMS Monographs* and *IMS Textbooks:* Mark Handcock
https://www.imstat.org/journals-and-publications/ims-monographs/

### IMS Co-sponsored Journals and Publications

*Electronic Journal of Statistics:* Grace Yi & Gang Li
https://imstat.org/ejs
https://projecteuclid.org/ejs

*Electronic Journal of Probability:* Bénédicte Haas
https://projecteuclid.org/euclid.ejp

*Electronic Communications in Probability:* Siva Athreya
https://projecteuclid.org/euclid.ecp

*Journal of Computational and Graphical Statistics:* Galin Jones, Faming Liang https://www.amstat.org/ASA/Publications/Journals.aspx
log into members' area at imstat.org

*Probability Surveys:* Mikhail Lifshits
https://imstat.org/ps
https://www.i-journals.org/ps/

*Statistics Surveys:* Yingying Fan
https://imstat.org/ss
https://projecteuclid.org/euclid.ssu

### IMS-Supported Journals

*ALEA: Latin American Journal of Probability and Statistics:* Daniel Remenik
http://alea.impa.br/english

*Annales de l'Institut Henri Poincaré (B):* Giambattista Giacomin, Yueyun Hu
https://imstat.org/aihp
https://projecteuclid.org/aihp

*Bayesian Analysis:* Mark Steel
https://projecteuclid.org/euclid.ba

*Bernoulli:* Davy Paindaveine
https://www.bernoulli-society.org/
https://projecteuclid.org/bj

*Brazilian Journal of Probability and Statistics:* Mário de Castro
https://imstat.org/bjps
https://projecteuclid.org/bjps

### IMS-Affiliated Journals

*Observational Studies:* Nandita Mitra
https://obs.pennpress.org/

*Probability and Mathematical Statistics:* Krzysztof Bogdan, Krzysztof Dębicki
http://www.math.uni.wroc.pl/~pms/

*Stochastic Systems:* Shane Henderson
https://pubsonline.informs.org/journal/stsy

# ICSDS meeting report continued

Continued from cover

## Plenary sessions

The four plenary sessions featured the following speakers:

**Emmanuel Candès** (Stanford University) on *Conformal Prediction in 2022*: delivered with a lively rap (duetting with the session chair Peter Bühlmann) on conformal statistics and then with a sign-along from the audience, making this a rare rhythmic and captivating opening plenary talk;

**Guido Imbens** (Stanford University, and 2021 Nobel Prize Laureate in Economics) on *Multiple Randomization Designs*: putting the classical experimental design and randomized controlled trial designs into modern experiments and usages;

**Susan Murphy** (Harvard University) on *Inference for Longitudinal Data After Adaptive Sampling*: addressing a variety of inferential questions using adaptive sampling methods to best use the real-time personalization of interventions in mobile health and education;

**Sylvia Richardson** (University of Cambridge) on *Scaling up Bayesian Modeling and Computation for real-world biomedical and public health applications*: discussing the adaptation of the divide-and-conquer approaches for large *n* to the inferential context of model choice and of mixture models—an adaptation that goes beyond the well-established divide-and-conquer approaches developed for posterior inference on a chosen model with fixed number of parameters.

All plenary sessions were well attended, in fact, standing room only! The plenary talks are available on the IMS YouTube Channel (search **ICSDS 2022 Plenary Talk** in YouTube).

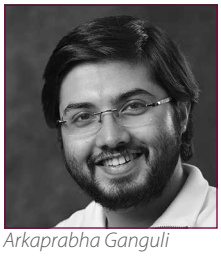
## Student Awards

The ICSDS presented 10 student travel awards, USD800 each. The awardees selected are diverse in their paper topics, genders, and countries of studies. They are: Arkaprabha Ganguli (Michigan State U. USA); Samantha Dean (Yale U., USA); Bertille Follain (Ecole Normale Supérieure/ INRIA PARIS, France); Shimeng Huang (University of Copenhagen, Denmark); Takuya Koriyama (Rutgers U. USA); Hanâ Lbath (Univ. Grenoble Alpes, INRIA, France); Marcos Matabuena (U. Santiago de Compostela, Spain); Lorenzo Pacchiardi (U. of Oxford, UK); Javier Aguilar Romero (SimTech Stuttgart University, Germany); and Ye Tian (Columbia U., USA). [*See their photos, right.*]

## Social Program

About 250 participants attended the conference banquet, held at the stunningly beautiful Palazzo Borghese on December 15. There were also two receptions. The conference reception was held at the conference venue concurrent with the poster session, and the banquet reception at the magnificent Palazzo Vecchio in the spectacular Salone dei Cinquecento ("Hall of the Five Hundred"). This reception began with an actor playing the role of Giorgio Vasari retelling the history of the Renaissance around the Cosimo de' Medici period; then a few local dignitaries welcomed the conference participants and thanked the IMS for choosing Florence as the conference site. Finally, Peter Bühlmann, as the IMS President, thanked the local supporters and remarked on the aptness of holding ICSDS in Florence, known as the city of Renaissance, for the Renaissance of our field's statistics and data science. [*You can read Peter Bühlmann's speech on page 6.*]

## ICSDS Student Travel Award winners


Arkaprabha Ganguli


Samantha Dean


Bertille Follain


Shimeng Huang

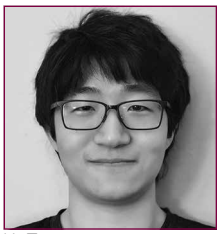

Takuya Koriyama

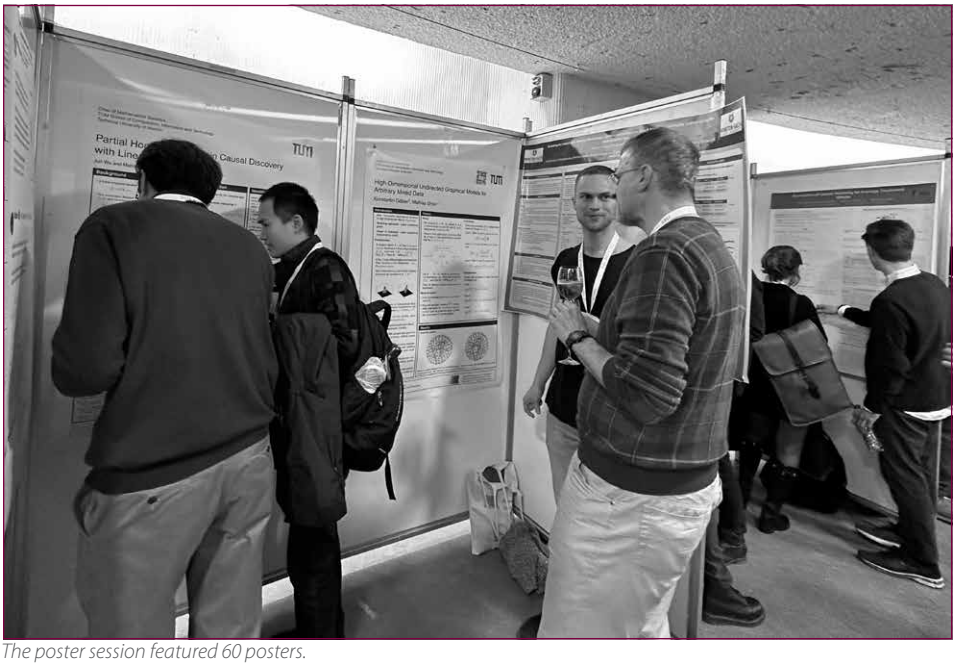

Hanâ Lbath


Marcos Matabuena Rodríguez


Lorenzo Pacchiardi


Javier Aguilar Romero


Ye Tian



*The poster session featured 60 posters.*

Many of the participants expressed their awe at the glorious settings of the conference banquet and reception, and also their appreciation of having these opportunities to enjoy themselves as well as network with other participants after the long COVID confinement.

## Acknowledgment

We are gratified to hear from many participants their praise for ICSDS 2022: several even told us that this was the best conference they had ever attended. But this success could not have been possible without the effort of many people. In particular, we are indebted to University of Florence and Florence Center for Data Science, especially the local committee chaired by Fabrizia Mealli, who also made it possible for us access the banquet venues at Palazzo Borghese and Palazzo Vecchio. We also thank our Program Committee (Genevera Allen, Ayan Basu, Arne Bathke, Gérard Biau, Merle Behr, Chun-houh Chen, Tim Cannings, Antonio Canale, Radu Craiu, Aurore Delaigle, Susanne Ditlevsen, Mathias Drton, Yingying Fan, Michele Guindani, Pauliina Ilmonen, Julie Josse, Liza Levina, Jialiang Li, Chae Young Lim, Po-Ling Loh, Gabor Lugosi, Taps Maiti, Alessandra Mattei, Hernando Ombao, Davy Paindaveine, Victor Panaretos, Saharon Rosset, Fabrizio Ruggeri, Aila Sarkka, Xiaotong Shen, Dylan Small, Francesco Stingo, Niansheng Tang, Lola Ugarte, Stéphanie van der Pas, Valeria Vitelli, Yin Xia, and Junhui Wang) for their contributions to the strong program. Moreover, IMS Director Elyse Gustafson supported us throughout. Finally, Qi Xu, PhD student in the Statistics Department at UC Irvine, worked tirelessly to help us on every aspect of this conference, managing the ICSDS website, responding to thousands of email requests, issuing official letters, making the program book, just to name a few. Qi is the unsung hero of this conference!

## Looking ahead

Given that ICSDS is to be held as a series of annual IMS conferences, we have been striving to set a high standard for the conference program and to ensure a broad coverage of the diversity issues that motivated this conference series (i.e., diversity of countries, subjects, genders, etc.). It was with this in mind that we formed the program committee by including 41 members with different domains of expertise from 17 countries. We hope to learn from the success of this first ICSDS, and continue to maintain the high standard as well as broad coverage of the program. We have again set up a broad and strong program committee for the next ICSDS.

## Next ICSDS Conferences

Save the date! The next ICSDS will be held in Lisbon, Portugal, December 18–21, 2023. The website for ICSDS 2023 is https://sites.google.com/view/icsds2023

The 2024 ICSDS will be in Nice, France, with the dates and conference venue to be determined.

*Read Peter Bühlmann's banquet speech, on the Renaissance of Italy and of our field, overleaf. And check out some more photos on the IMS Facebook page,* facebook.com/IMSTATI

*A moment of celebration for organizers Regina Liu, Fabrizia Mealli, and Annie Qu.*

# ICSDS Banquet Speech: Peter Bühlmann

At the IMS International Conference on Statistics and Data Science (ICSDS), which took place December 13–16, 2022, in Florence (Firenze), Italy, the banquet reception featured this speech by IMS President Peter Bühlmann.

Peter Bühlmann gave this speech in the beautiful surroundings of the ancient Palazzo Vecchio in Florence (Firenze)

*'Benvenuti al congresso internazionale statistiche e scienza dei dati!* This is the first congress of this type organized by IMS, and I am very proud of it.

This inaugural meeting is happening here in Firenze, a place with a rich history which we can feel and experience while being in this city and in this building! Let me dive into this history for a moment. In the Italian provinces, about 1000 years ago, the oldest universities in Europe and the western world were founded, and this marked the start of systematic university education. Perhaps as a consequence, the Italian renaissance started before and as a precursor for the main Renaissance which marked the transition from the Middle Ages to modernity. Firenze itself is considered to be the birthplace of the Renaissance and became a leading center in painting, architecture, sculpture, literature, music, philosophy, science, technology, and exploration. Renaissance Technology was born spreading clever inventions all over Europe. The Renaissance itself was characterized by an effort to revive and surpass ideas and achievements of classical antiquity.

Can we be inspired by this today? Efforts to perhaps "revive" and "surpass" the ideas and achievements of classical statistics, and develop them for modern times, for the world of data science? Of course, statistics is not dead and not forgotten: the action of "revival" is perhaps mainly a knowledge transfer to a large community for whom statistics is almost non-existent and dead. I am sure that some of us are passionate about engaging in education, in knowledge transfer, in interdisciplinary collaboration, and hence improving statistical literacy, statistical thinking, statistical modeling and data analysis at all different levels, from school and universities to leaders in science, industry and even politics! The action of *surpassing*, however, is somewhat different: it requires further development, ideas, and creativity in research, from theory and methodology to computing and practice—in statistics for data science. We, as the community in statistics, are outstandingly well positioned for both tasks, reviving and surpassing. We are not the only ones, of course, but this makes the endeavor much more interesting. As statisticians, we are "playing in everyone's backyard," as John Tukey said. But not only that: we surely are also playing in the front yard of the big house, the castle of Data Science: and this is the Renaissance of Statistics!

It is truly impressive that so many people joined this first exciting ICSDS conference. We have participants from 35 countries, very many exciting contributions and presentations, and there couldn't be a better place for such an inaugural event than here in Firenze: with *"un atmosfera fantastica,"* this congress will inspire and motivate us to be leaders in data science!

IMS has never had the opportunity to come to beautiful Italy before; the fortune is on our side that we—now—can experience Italian hospitality: *Grazie!*

My sincere thanks go to Regina Liu, Annie Qu, Qi Xu, Elyse Gustafson and Fabrizia Mealli. Annie and Regina: the founders and initiators of the idea of having the ICSDS congresses within IMS. I have never seen such a high-speed development from an initial idea to the final outstanding high-quality event. Elyse and Qi: the most efficient and superb workers behind the curtain who processed an enormous number of tasks. Fabrizia (and her team of local organizers), who set up and ran the conference in a way which couldn't be better! These five people should collect afterwards a tiny chocolate gift, engraved with "number one" as a sign of my appreciation for all your great work. And finally, of course, a big thank you to all of you for coming!

It's time for drinks now! *Salute!*

# **Radu's Ride:** In Praise of Praise

Radu Craiu resolves to not stay silent when praise could be given:

Many people feel tempted at the beginning of a New Year to express their ideas and intentions in resolute terms. I opt to plead in favour of gratitude and praise. The fog of insecurity blurs the contours of a happy academic life. Sheltered by its murkiness, sociological and psychological pathologies take over and wreak havoc with our lives. Whether it's the impostor syndrome recently featured in the *Written by Witten* column (in the December 2022 *Bulletin*), or suspicion, deflation, disenchantment and its nasty cousin, disillusionment, the effects are clearly damaging. As statisticians, we are familiar with our long history of holding off praise, subtle disassembling of any achievement scaffolding, and skepticism about reasonable solutions. Impress a statistician, and you can write home about it. There is certainly good that comes from not applauding indiscriminately at everyone and everything. But that doesn't mean that we should praise *nothing*.

Our culture used to be one in which one published rarely and exceedingly well, and no one even bothered to hear from the juries which are forever out, probably split evenly down that elusive middle that separates geniuses and idiots. Dostoevsky would disagree, of course.

Evidently, I am not completely fair since praise is not invisible. It comes in the form of prizes, conference and colloquia invitations, referee reports and editorial decisions. (While we're at it, can we get rid of the abhorrent "rejection with possibility of resubmission" category?). Our success is measured in minutes per talk and pages per referee report rebuttal.

To be fair, reservation about research is perhaps the right *modus vivendi*. Who in their right mind would get up and applaud in the middle of a Rachmaninov piano concert when so many difficult passages remain to be played? After two years of chaos, I hesitate to pretend that I stand on firm ground. If there is a resolution to be found, it must be one that was born in the last few months of a gone-but-not-missed 2022, as I took advantage of some time to travel and seek out my statistical community. Alone in my room, it had been easy to get overwhelmed by an abundance of papers built on skeletonized theory, over-compensated by bloated gloating and tortuous illustrations. I knew there was more out there.

Thankfully, my travels brought me in the vicinity of statisticians in their natural habitat, doing their usual thing. The contrast was stark and the gratitude I felt for the mere fact of their existence has not been stronger since my graduate school days. All of a sudden, I was immersed in terms I could grasp, guiding principles that made sense, and proofs that were coyly presented and summarily glanced. I was home! Data sets were large but not enough to circle the world if printed on toilet paper, and models had a beginning, a middle and an end. On a sunny day, one could say they were a poem rather than a shopping list written in Morse code.

Take, for instance, the wonderful ICSDS conference in Florence [*of which, more on the preceding pages*], which was teeming with statistics researchers, some not-so-young sampling from their past, and some very young preoccupied with predicting their future, despite the latter's maddeningly elusive nature. The whole time I felt warm gratitude for the organizers' courage in venturing off the beaten path, and towards all the researchers who traveled long distances, perhaps at great cost, so we could all be in one place at the same time.

There is plenty of goodness flowing within our community and it needs to be recognized. Otherwise, the harshness of our judgment incurs too large a tax on our future. As an illustration, take the Canadian funding landscape, where for years the NSERC grant of a Canadian mathematician was stochastically larger than that of their statistical counterpart. Our tendency to disparage our peers' work and propensity for lengthy and obstacle-laden reviews make it very difficult to compete with other disciplines on the job market (as I wrote in 2019: https://hdsr.mitpress.mit.edu/pub/v9fdn7n7/release/5.) It is in the spirit of combating these negative tendencies that I absorbed Nancy Reid's recent Q&A (in *Canadian Journal of Statistics*, https://doi.org/10.1002/cjs.11750) in which she urges statisticians to be kinder to each other.

So, traditions of coldness be damned. My resolution, you ask? When I like something created by a fellow statistician, I will emerge from my ivory shell and say so. When one of my colleagues does more than look out for Number One, I will congratulate them. When progress is made, in whichever form it may come—and I am smart enough to recognize it—I shall not be silent.

# Obituary: Jerome Sacks

## 1931–2023

Jerome "Jerry" Sacks

Jerome S. Sacks, 91, passed away peacefully on January 2, 2023. He was born on May 8, 1931 in the Bronx, was a graduate of the Bronx High School of Science and received his BA (1952) and PhD (1956) in mathematics from Cornell University, with Jack Kiefer as his advisor. From 1956 to 1961 he had positions at the California Institute of Technology, Columbia University and Cornell, at which point he moved to Northwestern University as Associate and then Full Professor. He stayed at Northwestern until 1984, with leaves at Rutgers University (1979–81) and the National Science Foundation (NSF) (1983–84). Jerry moved to the University of Illinois in 1984, serving as Head of the Department of Statistics until 1990. In 1991, Jerry became the Founding Director of the National Institute of Statistical Sciences (NISS), located in Research Triangle Park, North Carolina, and Professor in the Institute of Statistics and Decision Sciences at Duke University. When he retired from NISS in 2001, he assumed full-time duties at Duke, becoming Emeritus Professor in 2005.

Jerry was a visionary as the first director of NISS, recognizing that it was crucial for NISS to focus on broad interdisciplinary activities in research and education. Creation of NISS was recommended in the 1988 report *Cross-Disciplinary Research in the Statistical Sciences*, which was co-authored by Jerry and Ingram Olkin. The many dozens of postdocs at NISS were trained in this cross-disciplinary style of research and carried this on into their professional lives. This cross-disciplinary focus resulted in NISS becoming a melting pot, involving people from academia, industry and government. Jerry was personally active in almost all facets of NISS and could often be found vocally contributing at the research group meetings and workshops happening at NISS. According to Alan Karr, Associate Director under Jerry and later Director, "Jerry's attention to quality and innovation was relentless, and has enabled NISS to thrive throughout its 32 years of existence."

Jerry was also important to the creation of the Statistical and Applied Mathematical Sciences Institute (SAMSI), which functioned as a sister institute to NISS for many years. At his retirement, NISS established the Jerome Sacks Award for Cross-Disciplinary Research, in his honor, which has now been presented to 21 leading statistical scientists, including Jerry's PhD student, the late Cliff Spiegelman.

Jerry had an exceptional research career. An enduring interest of his was design of experiments. Much of this work was with the late Don Ylvisaker, the most influential being the papers on design aspects of regression problems; these started in classical mathematical statistics and eventually came to include calibration, response surfaces and computer experiments. Jerry did outstanding work in a host of other areas, including ecological regression and voting rights, chemometrics, and environmental health. To learn more about this research and its evolution from mathematical statistics to interdisciplinarity, see the excellent exchange in 2012 between Jerry and Don: "After 50+ Years in Statistics, an Exchange" (*Statistical Science*, Vol. 27, 308–318). Jerry was recognized for this research by becoming a Fellow of the Institute of Mathematical Statistics and the American Statistical Association.

Sacks' paper in 1989 (with Welch, Mitchell and Wynn), "Design and Analysis of Computer Experiments" (*Statistical Science*, 4, 409–435), arguably initiated what is now a huge field that spans statistics, applied mathematical modeling, engineering and many other disciplines. The field is called Uncertainty Quantification (UQ) outside of statistics, and involves the interaction of computer models (or other very complex models) with data, taking into account the many uncertainties inherent in the problem, including uncertainty in the computer models. (Of course, most statisticians interpret "uncertainty quantification" more generally.) At NISS, Jerry made UQ one of the central initiatives, studying highly complex scientific problems such as circuit optimization, traffic simulation, air pollution measurement, and automotive design, using both experimental design strategies and computer models. This eventually resulted in a joint initiative in UQ between the ASA and the Society for Industrial and Applied Mathematics (SIAM), involving interest groups, a new journal, and meetings. The first international conference in UQ of the ASA/SIAM initiative was in 2012; recognizing his central role in founding the field, Jerry was one of two plenary speakers at the meeting. Jerry remained active in UQ research, participating extensively in SAMSI UQ programs as late as 2019.

Jerry was also a major contributor to the advancement of the discipline of statistics through structural changes. NISS (and SAMSI) were, of course, the major

*Continues on* **page 9**

**Jerry Sacks, 1931–2023**

Continued from previous page

examples. Another was his stint at the NSF from 1983–84, as Director of the Statistics Program; he was able to significantly impact NSF support for statistics for the future. For all his contributions to the advancement of the discipline, Jerry received the Founders Award from the ASA in 1998.

Jerry was a lover of arts, especially jazz. He had a keen wit and was a joy to be around. His kindness and generosity were legendary and endeared him to all who knew him. There will be an invited memorial session for Jerry at JSM 2023 in Toronto, which will allow opportunities to share memories of him.

Predeceased by his wife Karin, Jerry is survived by daughters Sophia Sacks and Monica Freeland (Ryan), grandchildren Roxanne and Elliot, niece Anne Greenberg and nephew Richard Sacks (Marcia), and partner Mary Ellen Bock, the renowned statistician. Services were private. Memorial contributions may be made in his name to Southern Poverty Law Center, 400 Washington Avenue, Montgomery, AL 36104, www.splcenter.org.

*Written by James Berger*

# Obituary: Bruce Trumbo

## 1938–2022

CSU East Bay

*Bruce E. Trumbo*

On July 8, 2022, Dr. Bruce E. Trumbo, Professor Emeritus of Statistics and Biostatistics at California State University East Bay passed away. He was 84 years old.

Bruce Trumbo was a nationally and internationally recognized contributor to the field of Statistics. Bruce was a fellow of both the American Statistical Association and the IMS. He received the ASA Founders Award, "for his vision about the importance computers would play in research and laying the groundwork for these changes at the National Science Foundation (NSF), for leadership in solving problems related to establishing a computer-searchable version of *Current Index to Statistics* (*CIS*), for excellence in teaching including using real data, for providing indexes for the major statistical journals, for inspiring students of statistics in other disciplines, and for outstanding service to ASA." Bruce received the first IMS Carver Medal in 2002 for his contributions to the Institute and to the statistics profession. His selection for this award recognized his performance as an advocate for statistical science through his work for the federal government, contributions to establishing a widely used computer-searchable index of statistical publications, service as editor of several statistical publications, service as a member of policy-making committees of statistical societies, and contributions to the use of computers in the education of statisticians. Bruce served two terms as editor of the *CIS*, and oversaw its transition from printed paper volumes to a computerized searchable index. In 1994 he received the ASA Board of Directors' Certificate of Appreciation, "in recognition of his vision in extending the scope of the *Current Index to Statistics* and for introducing new electronic products." In 1998 Bruce again received this Certificate, "for outstanding contributions to the Association and the statistics profession through exemplary service as Editor of *AMSTAT online* from 1996–1998."

Three times, early in his career, Bruce took year-long leaves of absence from the university to work at NSF for the Division of Mathematical Science, serving as Program Director for Statistical Research. Through his leadership, many academic statisticians who previously might not have received funding were awarded NSF grants dedicated to integrating computational statistics with applied and theoretical research. Additionally, he worked to ensure that women statisticians were hired in this position following his terms, and he helped to appoint women into many important positions at the national level.

Bruce was the author of two books. *Learning Statistics with Real Data* (2001) was translated into Chinese by a former student. *Introduction to Probability Simulation and Gibbs Sampling with R* (2010), coauthored with a former student and colleague, included chapters on the Bayesian analysis of medical testing with uncertainty. Bruce published many papers, articles, and conference papers, several related to classroom presentation of statistical ideas.

*Continues on* **page 10**

**Bruce Trumbo, 1938–2022**

Continued from previous page

Some of his early research focused on adding color to maps, which was original work and early in this field. Bruce was awarded several grants that provided learning opportunities for his students.

Bruce joined California State College at Hayward (CSUH) in 1964 (later CSU Hayward, now CSU East Bay), having spent the previous year teaching in the Mathematics Department at San Jose State University while completing his PhD in Statistics from the University of Chicago. After joining the CSUH faculty, he helped develop the newly formed Statistics Department's undergraduate and Master's-level graduate curriculum. His students benefited professionally from his insights into Statistics and from his dedication to life-long learning, which allowed him to keep up with ever-changing technology. His efforts ensured his students were prepared to enter the job market locally, nationally, or internationally or to pursue PhDs immediately upon graduating. Bruce loved to teach and devoted his life to teaching and learning. His teaching spanned seven decades. Bruce continued to teach on the website math.stackexchange.com as BruceET, answering over 3,000 probability and statistics questions; he often included R code for demonstration purposes. Through these efforts, he earned 49,382 reputation points, placing him in the top 0.48% overall. His impact was impressive: he reached ~2.6 million people.

Bruce was dedicated to the field of Statistics and to the Department of Statistics and Biostatistics at CSUEB; his professional efforts will have a lasting impact on the field. He was an inspiring teacher, mentor, co-author, and friend to generations of students, faculty, and Department Chairs.

Bruce served with distinction as a faculty member. He was elected to and served many terms on the Academic Senate. For many terms, he served on or chaired the Faculty Affairs Committee. Early in his career, he served for a year in the President's Office, and he served as Department Chair for one term. Bruce was an active member of all Department committees, and he served on various College committees. Bruce received the George and Miriam Phillips Outstanding Professor of the Year award in 2003–04, honoring his contributions to students and academics; he received the Sue Shaffer Award for service to faculty in 2009–10. He was a pioneering faculty member whose faithful service on committees at every level of the University, and professional attention through providing individual mentoring, ensured faculty success in achieving tenure and promotions, publishing, and enhancing teaching techniques.

The **Bruce E. Trumbo Scholarship Endowment Fund** was established in 2008. This scholarship has been awarded 14 times in recognition of academic excellence and other related achievements in support of current students in the Department of Statistics and Biostatistics. Anyone wishing to make a contribution in Bruce's memory can do so by sending a check payable to: Cal State East Bay Educational Foundation, with the following notation at the bottom of the check: *Statistics and Biostatistics Department, Trumbo Scholarship*. The check should be mailed to: Cal State East Bay Educational Foundation, University Advancement, 25800 Carlos Bee Blvd., Hayward, CA 94542-9988. To donate online, visit the CSUEB secure online giving site: https://www.csueastbay.edu/giving/how-to-make-a-gift.html, select "Direct my gift to: SCHOLARSHIP – SCI" and select "The Bruce E. Trumbo Scholarship Endowment Fund."

*Written by Eric Suess, Professor; Julie Norton, Professor Emeritus; Ayona Chatterjee, Department Chair; and Ann Cambra, staff (retired); all from the Department of Statistics and Biostatistics, California State University East Bay.*

The Department of Statistics and Biostatistics is hosting a **Celebration of the Life of Bruce E. Trumbo**, who passed away in July 2022. The event will be held on **Saturday, April 8th**, 11:00 a.m.-3:00 p.m., at the Castro Valley Community Center, 18988 Lake Chabot Road, Castro Valley, CA.

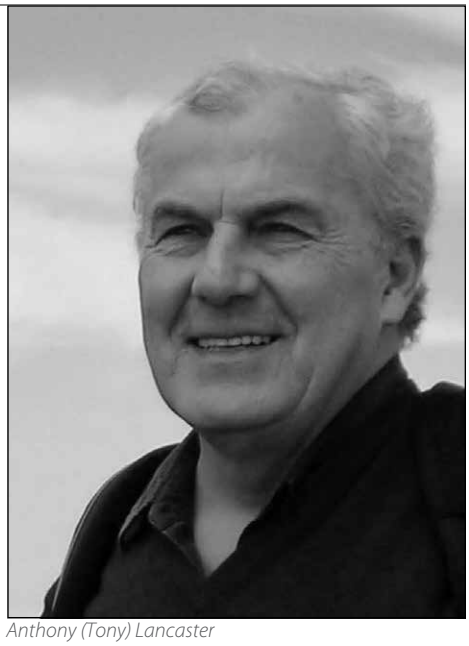
We hope you can join us in welcoming Bruce's sisters and nephew to this gathering of faculty, staff, students, alumni, and friends. The day's events will include:

11:00 a.m.–12:00 p.m. Arrival, refreshments
12:00 p.m.–1:00 p.m. Testimonials
1:00 p.m.–3:00 p.m. Invitation to make personal comments

Please reply to retired/volunteer staff member Ann Cambra (ann.cambra@csueastbay.edu) as soon as possible to let her know if you plan to attend. We need a head count for setup and ordering refreshments. If you plan to bring a guest, or guests, please let Ann know their name(s).

# Obituary: Anthony Lancaster

## 1938–2022



Anthony (Tony) Lancaster

Anthony (Tony) Lancaster, died on December 10, 2022 at HopeHealth Hulitar Hospice Center in Providence, Rhode Island, with his family by his side. Jane, Clare, Tom and Rob shared the ten-day vigil at the hospice. He was 84 years old.

Tony was born in Eccles, near Manchester, England, on June 25, 1938. He failed his eleven-plus, an exam for entry to a selective school, but passed at twelve, after coaching paid for by his grandfather. Having missed the first year at King George V Grammar School, he spent the next four years at the bottom of the C-stream. His time and energy went into snooker (he was Southport Junior Champion at fourteen) and the Air Training Corps. To everyone's surprise he did remarkably well in his mock GCEs (General Certificate of Education), so a young English master encouraged him to stay into the Sixth form. Unable to think of a better alternative, he did so.

He also did well in his Advanced Level exams, and went to Liverpool University, where he gained first class honors in Economics. He then attended St. Catharine's College, Cambridge, and completed his PhD in 1964. After a year in Dublin he took a job at Birmingham University, where he met Jane.

In 1973 he was hired by Hull University as a full professor, and he soon became department chair. After thirteen happy years in a tall Georgian house in Beverley, Yorkshire, he became part of the 1980s "brain drain" and moved to Brown University, an Ivy League college in Providence, Rhode Island. He later became department chair there, too.

In 1991 he was honored to be named a Fellow of the Econometric Society.

In addition to Brown, he held visiting positions at Harvard University, the Australian National University, the Indian Statistical Institute, the University of Wisconsin–Madison, the University of Washington, Cornell, Stanford, UCLA, and UCSD.

He loved poetry, bird watching, Manchester United football club, cricket, and Beverley. A great lover of travel, in later years he combined this with his love of cricket by attending Test Matches around the world, including in Australia, the West Indies, South Africa and Sri Lanka.

He is survived by Jane, his wife of 55 years, his daughter Clare and her sons Jack and Matt, and her granddaughters Stella and Bonnie—whom he got to meet a few weeks after their births, and a few months before his death—his son Tom, his wife Chang and children Alison, Daniel and Oscar, and his son Rob, his wife Devon and children Emery and Jake.

He is also survived by his "academic children," the scholars whom he mentored at the University of Birmingham, the University of Hull, and Brown University. These include, among others, Andrew Chesher, Guido Imbens who went on to win the Sveriges Riksbank Prize in Economic Sciences in honor of Alfred Nobel in 2021, Wilbert van der Klaauw (he brought these two young Dutchmen with him from Hull to Brown), Orna Intrator, Tiemen Woutersen and Peter Hansen.

Tony specialized in econometrics and wrote many seminal papers in duration analysis. His 1979 paper, "Econometric methods for the duration of unemployment" (*Econometrica: Journal of the Econometric Society*, 939–956) is a classic that introduced duration analysis to the econometrics discipline. He later wrote a monograph, *The Econometric Analysis of Transition Data* (1990, Cambridge University Press), that became the standard text in the area. Among his other highly cited papers the discussion of the incidental parameter problem in 2000, "The incidental parameter problem since 1948" (*Journal of Econometrics,* 95(2), 391–413) stands out. His writing was characterized by clarity and its focus on insights rather than technical obscurities, an art he tried to instill with great patience in all his students.

In the words of one of his many collaborators, "Tony showed me the value of pursuing research that leads to real progress in understanding human behavior, and that this is much more rewarding and important than following the fashion and trend."

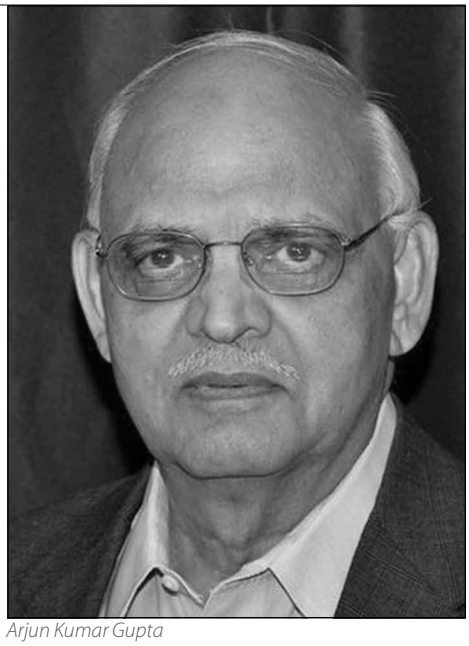
Tony's colleagues in the Economics Department at Brown remember the major role he played in establishing and nurturing the field of econometrics at the University. He is also remembered for being a thoughtful and calming presence in the department. These were qualities that stood him in good stead when he served as department chair from 1999 to 2002.

He will be missed by all of his families, his friends and colleagues.

*Written by Guido Imbens, Stanford University*

# Obituary: Arjun Kumar Gupta

## 1938–2022



Arjun Kumar Gupta

Arjun K. Gupta passed away peacefully at his residence in Bowling Green, Ohio on December 25, 2022. He was 84.

Dr. Gupta was born in 1938 in the small village of Purkazi in Uttar Pradesh, India, to Amar Nath and Leelavati Gupta. He earned his bachelor's degree in statistics from Banaras Hindu University (India) in 1959, Master's degree in mathematics from University of Poona (India) in 1962, and doctoral degree in statistics from Purdue University in 1968. At Bowling Green State University, he was a Distinguished University Professor in the Department of Mathematics and Statistics where he began working from 1976 until his retirement in 2015.

One of Dr. Gupta's areas of expertise was multivariate statistics. Perhaps the most important contribution he made to this field of statistics was on Wilks' Lambda, which was originally developed with his advisor from his dissertation about some central and non-central distribution problems in multivariate analysis. Wilks' statistics is used in traditional statistics but lacks an exact distribution with an easily computable form. In 1963, Dr. Gupta and his advisor were the first ones to derive the exact distribution of this test statistic in closed form, as well as the sum of a finite number of terms. Two other areas of expertise were in change-point analysis and skew distributions. In collaboration with his doctoral students and collaborators from around the world, Dr. Gupta developed novel change-point detection methodologies based on the likelihood ratio with the derivations of exact distributions of corresponding test statistics which have been commonly used in various academic fields like genetic studies. Moreover, he, along with his students and collaborators, provided a new, more efficient approach to change-point detection based on the information criteria through the view of model selection with its modified versions. Comparing to the traditional likelihood-ratio-based methods, this novel approach improved the issue of computation efficiency. Motivated by the skewness of data structures that arise in practical fields, such as economics and environmental studies, they also developed different types of skew distributions root from skew normal distributions as well as their theoretical properties. This important work has provided more flexibilities in data fitting purpose, especially for heavy-tailed data.

Throughout his 47-year career and until his retirement, Dr. Gupta's contributions—in teaching, advising, collaborating, researching, and publishing—to the field of statistics were vast and significant. He was an elected fellow of the American Statistical Association.

One of Dr. Gupta's colleagues once described him as an international ambassador of statistics. Regarded as an important mind and voice in the field of statistics, domestically and globally, he was invited to more than sixty countries to give talks and lectures in colloquia and conferences before his official retirement in 2015. During these travels, he not only shared and expanded his network with other research collaborators but also played the role of a statistics missionary and trailblazer who brought statistics to the far reaches of the world. For him, the trips also served the important purpose of introducing the field of statistics in many countries. His international contributions made statistics education accessible to those who might not have had access, changing people's lives dramatically.

Over the span of his career, he edited and (co-)authored more than twenty books and 530 peer-reviewed publications and advised more than thirty PhD students. Dr. Gupta was unshakably committed to education, serving as a mentor to countless students and academics. He was often quoted as saying, "Knowledge is power."

When he was asked what advice he would like to give the future generations, Dr. Gupta said "Education, education, education." He made himself a perfect model to indicate the importance of education.

His legacy as a great educator and a prestigious statistician will continue through the impact of his students, his peers and his colleagues. Dr. Gupta will be deeply missed by Bowling Green State University, by his students, by his colleagues, by his friends and by his family.

*Written by Prof. Wei Ning,*
*Department of Mathematics and Statistics,*
*Bowling Green State University*

# IMS Medallion Lecture Previews

## Jian Ding

Jian Ding received his PhD from The University of California, Berkeley in 2011. He is currently a Chair Professor at Peking University. Ding works on probability theory with emphasis on its interactions with statistical physics, theoretical computer science as well as statistical learning theory. With various coauthors, he has made contributions to topics including random constraint satisfaction problems, random planar geometry, random field Ising models, random walk in random environments and random Schrödinger operators. Ding has received recognition including the Rollo Davidson Prize 2017 (shared with Nike Sun), an ICM invited lecture 2022 (joint with Julien Dubédat and Ewain Gwynne) and the ICCM Gold Medal 2022.

This IMS Medallion Lecture will be given at the Seminar on Stochastic Processes (SSP) 2023 meeting (March 8–11, 2023, at the University of Arizona in Tucson, USA: see https://ssp2023.math.arizona.edu/home).

### Recent progress on random graph matching problems

A basic goal for random graph matching is to recover the vertex correspondence between two correlated graphs from an observation of these two unlabeled graphs. Random graph matching is an important and active topic in combinatorial statistics: on the one hand, it arises from various applied fields such as social network analysis, computer vision, computational biology and natural language processing; on the other hand, there is also a deep and rich theory that is of interest to researchers in statistics, probability, combinatorics, optimization, algorithms and complexity theory.

Recently, extensive efforts have been devoted to the study for matching two correlated Erdős–Rényi graphs, which is arguably the most classic model for graph matching. In this talk, we will review some recent progress on this front, with emphasis on the intriguing phenomenon on (the presumed) information-computation gap. In particular, we will discuss progress on efficient algorithms thanks to the collective efforts from the community. We will also point out some important future directions, including developing robust algorithms that rely on minimal assumptions on graph models and developing efficient algorithms for more realistic random graph models. This is based on joint work with Hang Du, Shuyang Gong, Zhangsong Li, Zongming Ma, Yihong Wu and Jiaming Xu.

## Sylvia Serfaty

Sylvia Serfaty received her PhD in 1999 from Université Paris Sud. She is currently Silver Professor at the Courant Institute of New York University. She works in the field of partial differential equations and mathematical physics. Her work has particularly focused on vortices in the Ginzburg–Landau model of superconductivity and on the statistical mechanics and dynamics of Coulomb-type systems. Prof. Serfaty authored a book on the Ginzburg–Landau theory with Étienne Sandier, *Vortices in the Magnetic Ginzburg–Landau Model* in 2007, and is one of the editors-in-chief of the scientific journal *Probability and Mathematical Physics*. In 2004, she was awarded the EMS Prize for her contributions to Ginzburg–Landau theory. Her other distinctions include the Henri Poincaré Prize in 2012, and the Mergier–Bourdeix Prize of the French Academy of Sciences in 2013. She was elected to the American Academy of Arts and Sciences in 2019. This Medallion lecture will be delivered at the 43rd Conference on Stochastic Processes and their Applications (SPA) in Lisbon, Portugal, July 24–28, 2023: https://www.spa2023.org/

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### Systems of points with Coulomb interactions

The common point between vortices in superconductors or in fluids, eigenvalues of classical random matrices ensembles, optimal optimization points on the sphere, is that they repel each other logarithmically, i.e. according to the two-dimensional Coulomb interaction. On the other hand, Coulomb gases, particularly in two and three dimensions, have been the object of important studies in statistical physics. Simulations indicate that the macroscopic distribution does not depend much on the temperature, while the microscopic patterns depend strongly on it, and seem, in two dimensions, to converge to triangular lattice patterns as the temperature vanishes. These triangular patterns are the same as those observed in superconductors and superfluids, and are named Abrikosov lattices. Some physics papers also observe numerically a finite crystallization temperature. It turns out that these crystallization questions are directly related to questions in number theory, and to recent breakthroughs by Cohn, Kumar, Miller, and Viazovska on the Cohn–Kumar conjecture.

In this talk, I will review the above motivations for studying large Coulomb systems in any dimension, and present the electric formulation of the energy, how it sheds some light on the microscopic behavior described above and connects to number theory questions, and how it also allows to derive the effective dynamics of many interacting Coulomb particles.

# Richard Kenyon

Richard Kenyon received his PhD from Princeton University in 1990 under the direction of William Thurston. After a postdoc at IHES, he held positions at CNRS in Grenoble, Lyon, and Orsay and then became professor at UBC, Brown University and then Yale where he is currently Erastus L. Deforest Professor of Mathematics. He was awarded the CNRS bronze medal, the Rollo Davidson prize, the Loève prize, is a member of the American Academy of Arts and Sciences, and is a Simons Investigator. This Medallion lecture will be delivered at the 43rd Conference on Stochastic Processes and their Applications (SPA) in Lisbon, Portugal, July 24–28, 2023: https://www.spa2023.org/

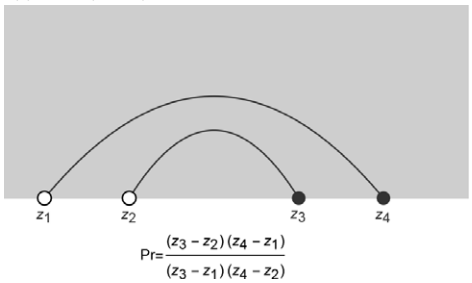
### Dimers, webs and $SL_3$

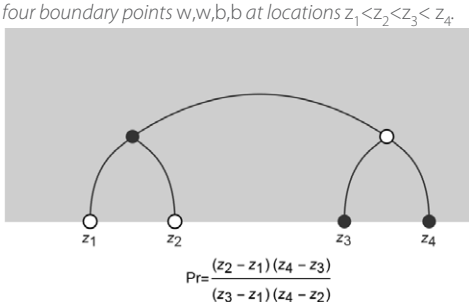
The dimer model, or domino tiling model, is the study of the set of dimer covers (also called perfect matchings), of a planar graph or graph on a surface. It is a very successful combinatorial and probabilistic model with connections to the Grassmannian, conformal field theory and integrable systems. The dimer model on the square grid was the first stat mech model rigorously shown, in 2000, to have a conformally invariant scaling limit.

A *double dimer cover* is obtained by superimposing two dimer covers, to get a collection of loops and doubled edges. In 2011, with David Wilson we studied *boundary connection probabilities* for the double dimer model in planar graphs, giving the probabilities of the different ways in which boundary points could be connected by chains of double-dimers. These probabilities can be computed from the so-called boundary measurement matrix, or reduced Kasteleyn matrix. As application of the scaling limit of these probabilities, one can compute connection probabilities for multiple $SLE_4$ curves in the disk. These calculations implicitly use an $SL_2$-structure on the underlying surface. It is natural to ask about $n$-fold dimer analogs, and the corresponding $SL_n$-structures. A union of $n$ dimer covers of a single graph makes a more complicated structure called a graphical $n$-web, or $n$-multiweb. With Daniel Douglas and Haolin Shi we extended the Kasteleyn theory to $SL_n$-structures, giving enumerative results on $n$-fold dimers.

The case $n$=3 turns out to be simpler than the case of general $n$ because of the notion (originally due to Kuperberg) of "reduced" webs. New results (joint with Haolin Shi) show how to compute the probabilities, and their scaling limits, of reduced 3-webs in the triple dimer model. An example is shown in the figure below.

*Upper half plane probabilities of the two reduced webs with four boundary points* w,w,b,b *at locations* $z_1<z_2<z_3<z_4$.



# Yingying Fan

Yingying Fan received her BS in Statistics and Finance from the University of Science and Technology of China in 2003, and her PhD in Operations Research and Financial Engineering from Princeton University in 2007. She is currently Centennial Chair in Business Administration and Professor in Data Sciences and Operations Department of the Marshall School of Business at the University of Southern California. Yingying's research interests include statistics, data science, machine learning, economics, big data and business applications, and artificial intelligence. Her latest works have focused on statistical inference for networks, texts, and AI models empowered by some most recent developments in random matrix theory and statistical learning theory. She is the recipient of a number of honors including the International Congress of Chinese Mathematicians 45-minute Invited Lecture (2023), Fellow of the IMS (2020) and ASA (2019), the Royal Statistical Society Guy Medal in Bronze (2017), the ASA Noether Young Scholar Award (2013), and NSF Faculty Early Career Development (CAREER) Award (2012). She is the IMS Editor of *Statistics Surveys* (2023–25) and an associate editor of journals including *Annals of Statistics* (2022– ), *Information and Inference* (2022– ), *Journal of Business & Economic Statistics* (2018– ), and *Journal of the American Statistical Association* (2014– ). This Medallion Lecture will be given at the Joint Statistical Meetings in Toronto, August 5–10, 2023.

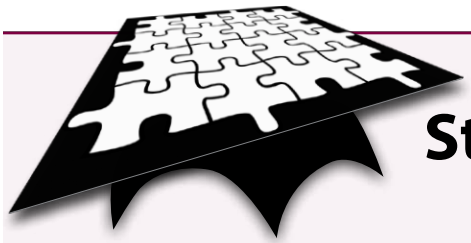
### High-Dimensional Random Forests Estimation and Inference

As a flexible nonparametric learning tool, the random forests algorithm has been widely applied to various real applications with appealing empirical performance, even in the presence of high-dimensional feature space. Indeed, it is arguably the most popularly used nonparametric learning method besides deep learning. Yet, because of its black-box nature, the results by random forests can be hard to interpret in many big data applications. This talk contributes to a fine-grained understanding of the random forests algorithm by discussing its consistency and feature selection properties in a general high-dimensional nonparametric regression setting.

Specifically, we derive the consistency rates for the random forests algorithm associated with the sample CART splitting criterion used in the original version of the seminal algorithm proposed by Breiman (2001). Our derivation was built on a bias-variance decomposition analysis. Our new theoretical results show that random forests can indeed adapt to high dimensionality and allow for discontinuous regression function. Our bias analysis takes a global approach that characterizes explicitly how the random forests bias depends on the sample size, tree height, and column subsampling parameter; and our variance analysis takes a local approach that bounds the forests variance via bounding the tree variance. A major technical innovation of our work is to introduce the sufficient impurity decrease (SID) condition that makes our bias analysis possible and precise. Such a condition also allows us to characterize the complexity of the random forests algorithm with the sample CART splitting criterion. We verify that many popularly used high-dimensional sparse nonlinear models satisfy the identified SID condition.

We further proceed with quantifying the usefulness of individual features in random forests learning, which can greatly enhance the interpretability of the learning outcome. Existing studies have shown that some popularly used feature importance measures suffer from the bias issue. In addition, most of these existing methods lack comprehensive size and power analyses. We approach the problem via hypothesis testing and suggest a general framework of the self-normalized feature-residual correlation test (FACT) for evaluating the significance of a given feature. The vanilla version of our FACT test can suffer from the same bias issue as existing methods in the presence of feature dependency. We exploit the techniques of sample imbalancing and feature conditioning for bias correction. We further incorporate the ensemble idea into the FACT statistic through feature transformations for enhanced power. We formally establish that FACT can provide theoretically justified random forests feature $p$-values and enjoy appealing power through nonasymptotic analyses. These new theoretical results and finite-sample advantages of FACT for random forests inference are illustrated with several simulation examples. We also investigated an economic forecasting application in relation to COVID-19 using the suggested FACT framework.

Despite exciting recent progresses toward a better understanding and enhanced interpretation of the random forests algorithm, there are still many open questions that deserve further in-depth investigations. This lecture will end with a discussion of these related open questions.



# Student Puzzle Corner 43

**Student Puzzle Editor Anirban DasGupta poses another two problems, one each in probability and statistics. Send us your solution, to either or both.**

**Puzzle 43.1:**

(i) Simulate 1,000 standard Cauchy variables, and plot $\bar{X}_n$ against $n$ for $n = 1, 2, \ldots, 1000$, where $\bar{X}_n = \frac{1}{n}\sum_{i=1}^{n} X_i$.

(ii) Briefly discuss what do you see in this plot that is interesting.

(iii) What is your guess for $\limsup_{n\to\infty} |\bar{X}_n - e^n|$, and justify why that is your guess.

**Puzzle 43.2:**

Suppose $X$ has a discrete uniform distribution on the set $\{1, 2, \ldots, N\}$, where $N \geq 1$ is an unknown integer-valued parameter. Construct an explicit admissible estimator of $N$ under squared error loss and provide a proof of your estimator's admissibility.

**Deadline: March 15, 2023**

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 to either or both of these puzzles, and the answer, will be published in the issue following the deadline.

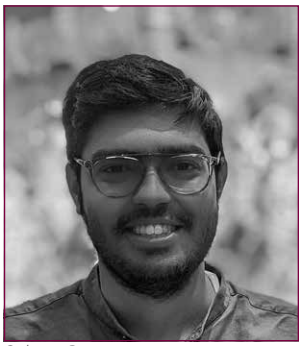
The Puzzle Editor is Anirban DasGupta. His decision is final.

**A reminder of the previous puzzles:**

**Puzzle 42.1:** You have all seen a standard normal CDF table in a text. Typically, the table gives approximate CDF values from 0 to 5 at increments of 0.01 in the argument $x$. Suppose now you want the grid to be finer, with an increment of some suitable $\epsilon$. You want to choose $\epsilon$ in a way that the largest jump in the CDF value between two successive values of $x$ is at most 0.001. One page using standard font in a text can give 400 CDF values. How many pages will your standard normal table take? Remember, you want to cover $x$ in the interval 0 to 5.

**Puzzle 42.2:** Suppose $S$ is a Wishart distributed $p \times p$ matrix with $k$ degrees of freedom and parameter matrix $\Sigma$, assumed to be positive definite. Find in closed form the UMVUE of the determinant of $\Sigma$ for general $p$, and the variance of the UMVUE for $p = 2$.

## Solution to Puzzle 42



Soham Bonnerjee

Congratulations to **Soham Bonnerjee**, who is a PhD student in the Department of Statistics at the University of Chicago, for his correct solution to both parts.
Puzzle Corner Editor Anirban DasGupta explains the answers:

**Puzzle 42.1:**

It is easily seen that for any $\epsilon > 0$, $\Phi(x+\epsilon)-\Phi(x)$ is maximized at $x = 0$ on $[0,\infty)$ due to the monotonicity of $\phi(x)$ on $[0,\infty)$. Hence, we want $\epsilon$ to satisfy $\Phi(\epsilon) - \frac{1}{2} = .001$, which gives $\epsilon = \Phi^{-1}(.501) = .0025$. Assuming, for example, that we can print 8 numbers in one line and that we can accommodate 40 lines in one page, we will need $\frac{5}{.0025}/320 = 6.25$ pages.

**Puzzle 42.2:** On the second problem, a classic result is that if $S_0 \sim \mathcal{W}_p(n-1, I)$, then the Cholesky decomposition of $S_0 = TT'$ satisfies that $\{T_{ij}\}$ are mutually independent and that for $i > j$, $T_{ij} \sim N(0, 1)$ and $T_{ii}^2 \sim \chi^2_{n-i}$, $i = 1, 2, \ldots, p$. Hence, for $S \sim \mathcal{W}_p(n-1, \Sigma)$,

$$E\left[\frac{|S|}{|\Sigma|}\right] = \prod_{i=1}^{p}(n-i),$$

which gives the UMVUE of $|\Sigma|$ for any $p$, by the fact that $(\bar{\mathbf{X}}, S)$ is a complete sufficient statistic and then an application of the Lehmann–Scheffé theorem.
The variance of the UMVUE uses the second moment of a central chi-square variable and is straightforward.

# New Researchers Group news

Pragya Sur is an Assistant Professor in the Department of Statistics at Harvard University, and the President of the IMS New Researchers Group. She welcomes you to join in its activities, including the New Researchers Conference, held this year at the University of Toronto immediately before the Joint Statistical Meetings. Read on for how to apply, and how to get involved in the NRG:

The IMS New Researchers Group (IMS NRG) has a short but rich history. Formally founded in 2014 following the IMS New Researchers Conference (IMS NRC) held at Harvard, the group has ever since focused on a sustained continuation of the Conference. The NRC serves as a melting pot of young researchers from diverse fields of Statistics and Probability, helps foster new connections, and provides substantial mentorship opportunities from senior members of the community. The Conference itself predates the formal foundation of the group and has been in existence for much longer. With this rich history behind it, I was honored when I was approached to lead the NRG activities going forward. I took on this role formally in August 2022. Since then, we have been busy expanding our activities and reach beyond the purview of the IMS NRC. Before I delve into our recent activities, for the interested reader, let me provide a sneak peek of the upcoming NRC.

## IMS New Researchers Conference

IMS NRC 2023 will be held at the University of Toronto from August 2–5, 2023, in its usual spot right before JSM. The local organizers, Dr. Linbo Wang and Dr. Dehan Kong, have served an instrumental role in the planning process. We have several panels planned, from publishing to funding, mentoring, promotion, and so on. We seek to provide participants with a broad array of topics covering areas where a young researcher may face potential challenges, and hold a discussion surrounding these, all the while providing opportunities to ask questions of senior researchers on these topics. We also hope young folks form connections with each other through the NRC that can last as a solid long-term network in their careers.

**The application deadline for the conference is April 24, 2023**. We urge all young researchers within the eligibility criteria to apply. More details can be found here: https://sites.google.com/site/linbowangpku/nrc-2023

## Join the New Researchers Group

Since last August, my personal goal for the New Researchers Group has revolved around expanding its reach beyond the Conference. To this end, we have instituted a formal membership process—one that had been non-existent so far. (Read how to join at https://imstat.org/ims-groups/ims-new-researchers-group/). Becoming a formal NRG member provides you with access to important resources that might otherwise go amiss. For instance, we plan to use the **group email** as a way to connect young researchers with resources such as announcements on important and interesting conference/workshop sessions, job openings, etc. We also hope that being part of the group provides a sense of community to new researchers and that they find this valuable in their own ways. Further, in partnership with the YoungStatS project (an analogue of IMS NRG based in Europe [*see the next page for more information*]), the organizers of the Young Data Science Researcher Seminar Zurich, we plan to run two or three **webinars** per year with talks on cutting-edge topics in modern statistics and machine learning featuring recent works by young researchers. These talks aim to highlight major recent developments made by young researchers in thriving sub-fields of our discipline. We plan to hold the first webinar in March 2023, with a focus on causal inference and invariance. As more details are finalized, we will send out announcements regarding these through various channels, including the aforementioned IMS NRG mailing list.

## Invited sessions for New Researchers

To further the cause of showcasing new researchers' work, the NRG plans to organize invited sessions at the IMS Annual Meeting, the IMS International Conference on Statistics and Data Science (ICSDS) and CMStats [the Computational and Methodological Statistics meeting] every year. Be on the lookout for our **session on causal inference planned for JSM 2023** (where the IMS Annual Meeting will be held this year), with three stellar speakers and a discussant.

With the Conference, webinar series, and invited session organizations, the NRG has active plans. I personally hope these efforts pay off, that the NRG can provide valuable networking opportunities and a sense of community to new researchers, and that this aids in career development for a significant number of scholars of our generation. I encourage you to join the group and participate in its activities, be it the Conference or beyond.

# YoungStatS project update

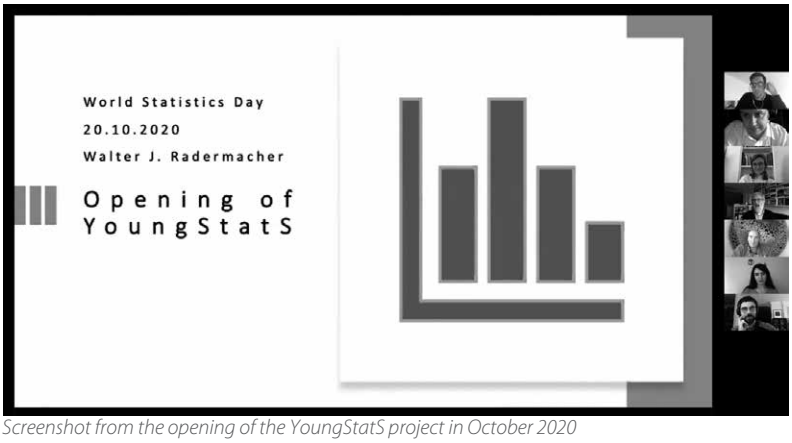
**Towards an open community in statistics, probability and econometrics: Introduction to interviews with YoungStatS project presenters**

Andrej Srakar, PhD, is coordinator and Co-Editor of the YoungStatS project. He works as a Scientific Associate at the Institute for Economic Research in Ljubljana, Slovenia, and is an Assistant Professor at the School of Economics and Business, University of Ljubljana. He writes:

I am pleased to introduce a forthcoming series of interviews in the *IMS Bulletin* with collaborators of the YoungStatS project. YoungStatS derives from changes in present day science, oriented toward an open science community that favors the communication of scientific findings, as well as the outburst of connections caused by online seminars such as One World Probability, One World ABC, Online Causal Inference Seminar and Gary Chamberlain seminar in econometrics. We discuss the developments in the statistical, probabilistic, and econometric communities during the pandemic and we present possibilities, vision, and plans of the project in the upcoming years.

Science, including probability and statistics, should not take place in an ivory tower. This is the message resulting from decades of discussions within the scientific community, exacerbated during the COVID-19 pandemic. In recent times I have observed econometricians such as Pedro Sant'Anna and Peter Hull constantly attempting to discuss their findings and bring them to the general public, often asking their followers for suggestions directly on social media. This highlights how communication is an important part of good science. That is why presenting findings in a seminar is as beneficial to the authors as it is to the participants. All the online seminars in times of the pandemic featured the same mantra: "We strongly encourage you to ask questions."

It was this atmosphere that gave birth to YoungStatS. We settled on the idea, best exemplified by the VoxEU economics policy website, or the zbMATH Open project, of providing a platform where readers can access short summaries of recent leading research works in their fields. It was my own proposal to develop such a platform for statistics and probability, with possible extensions to data science, econometrics, and mathematics. The idea was adopted by the Young Statisticians Europe initiative of The Federation of European National Statistical Societies and presented to the public on World Statistics Day 2020. From the beginning we have been fortunate enough to be supported by the Bernoulli Society for Mathematical Statistics and Probability, as well as the Institute of Mathematical Statistics. We have also received supportive emails from the Econometric Society.




*Screenshot from the opening of the YoungStatS project in October 2020*

As well as the blog platform, YoungStatS features the renowned One World YoungStatS webinars. This initiative has been inspired by the One World Probability project, which united scholars in probability throughout the COVID-19 pandemic. Our (typically monthly) webinars present leading works of younger scholars in all areas of mathematical statistics, probability, econometrics, and data science (with extensions in mathematical physics and other areas of mathematics).

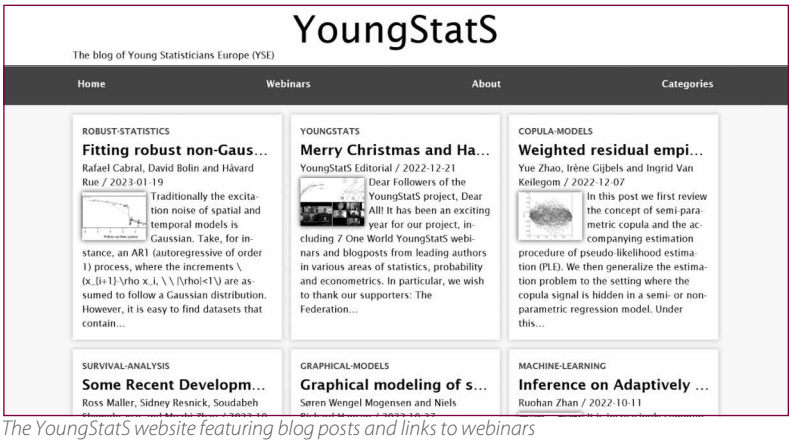
In March we are starting a **joint webinar collection in collaboration with the New Researchers Group of the Institute of Mathematical Statistics and the Young Data Science Researcher Seminar Zurich**. [*See Pragya Sur's article about the IMS New Researchers Group on the previous page.*]

While the pandemic has been a time of work overload for scholars, posts on our blog have encompassed important recent debates and findings. We have posted summaries with R code of the Bayesian causal forests estimator of P. Richard Hahn and coauthors and its sequel BCF-IV of Falco Bargagli-Stoffi. Our articles have included the explanations of generative adversarial networks (GAN) by Gérard Biau and coauthors and of higher-order targeted maximum likelihood estimator by Zeyi Wang and Mark van der Laan. Balázs Ráth, Jan M. Swart and coauthors have written about endogeny for frozen percolation on the binary tree. Recently, Ruohan Zhan has contributed a summary of her joint work on inference for adaptively collected data. Yue Zhao, Irène Gijbels and Ingrid Van Keilegom provided a summary of their *Annals of Statistics* article on parametric copula adjusted for non- and semiparametric regression.

In future, it is our aim to develop into a platform enabling constant and easy

presentations, while retaining the One World webinar vitality. We will continue in the direction of presenting different areas of mathematical statistics, probability, econometrics, data science, and mathematics. We live in the artificial intelligence era and we expect a large development of data science and all its methodologies. Probability remains foremost an interesting and possibility-rich area of present day mathematics. Econometrics opens to data science and machine learning and many novel developments are expected in the near future. Bayesian statistics, algebraic statistics, causal inference, object-based data analysis, nonparametric statistics are just few areas with strong vitality. In the blog platform, as well as the webinar series, we aim to represent, reflect, and steer these developments.

In the next issues of the *IMS Bulletin*, you will be able to read interviews with selected authors, presenters, and discussants of YoungStatS. We have already agreed to contribute with Susan Athey, Antti Knowles and Germain Van Bever. We plan to bring you the vitality of our project closer and contribute to the set objective, open community of scholarship in statistics and probability, as well as quality content. We hope you enjoy it.



*The YoungStatS website featuring blog posts and links to webinars*

Check it out at **https://youngstats.github.io/**

# PhD Students: apply for IMS Brown Award

The **IMS Lawrence D. Brown PhD Student Award** is open: the application deadline is May 1, 2023. Eligible applicants compete to be one of three speakers at an invited session as part of the IMS Annual Meeting (which will be the **Bernoulli–IMS 11th World Congress in Probability and Statistics**, in Germany, August 12–16, 2024).

Lawrence D. Brown (1940-2018), Miers Busch Professor and Professor of Statistics at The Wharton School, University of Pennsylvania, had a distinguished academic career with groundbreaking contributions to a range of fields in theoretical and applied statistics. Moreover, he was an enthusiastic and dedicated mentor to many graduate students. This award was established with funds from Brown's family and friends. (Donations to this fund are welcome: see https://www.imstat.org/shop/donation/ under "IMS Lawrence D. Brown Ph.D. Student Award Fund.")

Eligible applicants will compete to be one of three speakers at an invited session as part of the IMS Annual Meeting. The award will also include reimbursement for both travel and the meeting registration fee (up to $2,000 in total for each recipient). Applicants must be

- IMS members (joining at the time of applying for the award is permitted; join here, student membership is FREE)
- current PhD students (i.e., have not yet received their PhD degree) at the time of the application deadline, who are studying an area of statistical science, probability or machine learning;
- able to present at the following year's IMS Annual Meeting.

The deadline to submit an application is May 1, with winners announced by November 1. The winners will then present their paper in an invited session at the IMS Annual Meeting the following year. The award application and the meeting abstract submission/registration will be managed separately.

For more details, and to apply, please visit https://imstat.org/ims-awards/ims-lawrence-d-brown-ph-d-student-award/

# Educate Africa: an appeal for researchers

Queensley C. Chukwudum (University of Uyo, Nigeria) and Saralees Nadarajah (University of Manchester, UK, and Howard University, Washington DC, USA) would like your assistance, to support African research that benefits Africa. They write:

It is a sad fact that Africa has been, and continues to be, affected by exploitation from outsiders, mainly perpetuated by Europeans and Americans. The Atlantic Slave Trade resulted in incalculable suffering for African people, and no compensation was given to those affected by it. The colonization of Africa has also brought significant loss of resources and wealth. Additionally, the extraction of minerals from Africa has been used to benefit industries in other countries.

Further, there is a history of intellectual exploitation where scientific papers, published in the name of Africa, have primarily benefited non-African authors, while not giving credit to African contributions. These publications have mostly benefited the careers of European and American researchers. It is important to acknowledge and address these injustices in order to move towards a more equitable future. One discipline that has benefited a great deal from publications in the name of Africa is statistics: statisticians in the Global North have benefited by publishing papers in the name of Africa, without including Africans as co-authors. These include people at the top of their profession who are supposed to be torch-bearers of statistics in the UK and globally. Sadly, this has given rise to a neocolonial science.

Sometimes, African scholars have been used to carry out the groundwork, such as the collection of data for survey, data cleaning, fieldwork and so forth. However, they don't receive acknowledgment, let alone training so that they become a core part of the research studies. The results of this kind of treatment are:

1. African scholars are kept in the dark, both funding-wise and knowledge-wise.
2. Seeing European and American researchers as the acme of knowledge and truth, they troop out en masse to these Western countries in search of greener academic pastures. This has led to massive brain drain in many African countries.
3. This lack of confidence perpetuates across generations, causing a drastic decline in STEM-related researchers in Africa, and researchers who do not believe that they can undertake high quality research (on their own) that will be accepted by top-tier journals. This has been made evident in Duermeijer et al. (2018, Elsevier Connect) which indicates that only about *1 percent of the world's research is from Africa by African scholars*. There is however a silver lining, according to this report: Africans possess a high potential for tremendous growth in scientific production.

It was in the pursuit of justice and equality, and a burning desire to foster such a growth process, that in 2017 Saralees Nadarajah established the **EducateAfrica** project: https://educate-africa.github.io/.

One of the aims of EducateAfrica is to work *with* researchers in Africa, encouraging them to work on problems that are important to the continent. Many papers have been published as a result of this collaboration, including Musara et al. (2022, *Scientific Reports*, 12, article number 7698), Okorie et al. (2021, *Scientific Reports*, 11, article number 12309), and Chukwudum and Nadarajah (2022, *Environmental Modeling and Assessment*, 27, 343-362).

This collaboration continues in spite of the many difficulties that researchers in Africa face. Most of the statistics departments in Africa do not have adequate resources. Often there are very few functional computers for the entire department. In many countries there are daily electricity cuts (not to mention shortages of food, fuel, etc.) which adds to the hardship. Overall, a typical African scholar barely crosses the survival threshold, and hence requires all the help and nurturing care they can get. Needless to say that the perpetrators of neocolonial science will never provide such care.

## Ways to support

We are resolute in our desire to help change the narrative in Africa no matter the cost. If some help can be provided in terms of **books, journals, computers and funds** through the GoFundMe platform https://gofund.me/2bfbcd90, that will go a long way in making a direct impact in the lives of locally-based African statisticians and mathematicians.

# Recent papers: two co-sponsored journals

## *Electronic Journal of Statistics*

The *Electronic Journal of Statistics* (*EJS*) publishes research articles and short notes on theoretical, computational and applied statistics. The journal is open access. Articles are refereed and are held to the same standard as articles in other IMS journals. Articles become publicly available shortly after they are accepted. This journal is a free access official journal of the IMS and the Bernoulli Society. The Co-Editors are Grace Y. Yi and Gang Li.

Author or publication fees are not required. Voluntary fees or donations to the Open Access Fund are accepted (see https://www.imstat.org/shop/donation/). Expenses not covered by voluntary payments are paid for by the co-sponsoring societies as a service to the community.

Access papers at **https://projecteuclid.org/journals/electronic-journal-of-statistics**

## *Statistics Surveys*

*Statistics Surveys* publishes survey articles in theoretical, computational, and applied statistics. The style of articles may range from reviews of recent research to graduate textbook exposition. Articles may be broad or narrow in scope. The essential requirements are a well specified topic and target audience, together with clear exposition. This journal is a free access official journal, sponsored by the American Statistical Association, the Bernoulli Society, the Institute of Mathematical Statistics, and the Statistical Society of Canada. The Coordinating Editor is Wendy L. Martinez, and the Editor for IMS is Marloes Maathuis. The other editors are Sara van de Geer (Bernoulli), Ranjan Maitra (ASA), and Richard A Lockhart (SSC).

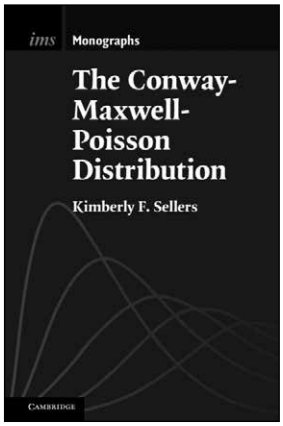
Author or publication fees are not required. Voluntary fees or donations to the Open Access Fund are accepted (see https://www.imstat.org/shop/donation/). Expenses not covered by voluntary payments are paid for by the co-sponsoring societies as a service to the community.

Access papers at **https://projecteuclid.org/journals/statistics-surveys**

NEW BOOK

*The Institute of Mathematical Statistics presents*

# *IMS MONOGRAPHS*




## *The Conway–Maxwell–Poisson Distribution*

Kimberly F. Sellers, Georgetown University, Washington DC

While the Poisson distribution is a classical statistical model for count data, the distributional model hinges on the constraining property that its mean equal its variance. This text instead introduces the Conway-Maxwell-Poisson distribution and motivates its use in developing flexible statistical methods based on its distributional form.

This two-parameter model not only contains the Poisson distribution as a special case but, in its ability to account for data over- or under-dispersion, encompasses both the geometric and Bernoulli distributions. The resulting statistical methods serve in a multitude of ways, from an exploratory data analysis tool, to a flexible modeling impetus for varied statistical methods involving count data.

The first comprehensive reference on the subject, this text contains numerous illustrative examples demonstrating R code and output. It is essential reading for academics in statistics and data science, as well as quantitative researchers and data analysts in economics, biostatistics and other applied disciplines.

Kimberly F. Sellers is Professor in the Department of Mathematics and Statistics at Georgetown University, and Principal Researcher with the Center for Statistical Research and Methodology at the US Census Bureau.

**Hardback $135.00 available in March**

**IMS members receive a 40% discount: email ims@imstat.org to request your code**

## www.imstat.org/cup

Cambridge University Press, with the Institute of Mathematical Statistics, established the *IMS Monographs* and *IMS Textbooks* series of high-quality books. The series editors are Nancy Reid (Coordinating Editor), Ramon van Handel (Probability), Arnaud Doucet (Algorithms) and John Aston (Statistics).

# IMS meetings around the world

## Joint Statistical Meetings

**2023 Joint Statistical Meetings**
**August 5–10, 2023 in Toronto**
**w** https://ww2.amstat.org/meetings/jsm/2023/
The IMS Program Chair is Huixia Judy Wang, George Washington University.


JSM dates for 2024–2026

| JSM 2024 | IMS Annual Meeting @ JSM 2025 | JSM 2026 |
|---|---|---|
| August 3–8, 2024 | August 2–7, 2025 | August 1–6, 2026 |
| Portland, Oregon, USA | Nashville, TN, USA | Boston, MA, USA |

**Seminar on Stochastic Processes (SSP2023)**
**March 8–11, 2023**
**University of Arizona, Tucson**
**w** https://ssp2023.math.arizona.edu/home
SSP is a series of annual conferences devoted to stochastic analysis, Markov processes, and other topics of current interest in probability theory. Tutorial lectures by Gérard Ben Arous on March 8. Invited speakers: Patricia Alonso Ruiz, François Delarue (Kai Lai Chung Lecture), Jian Ding (Medallion), Patrícia Gonçalves, Philippe Sosoe. Registration open now. **Graduate students and postdoctoral fellows are especially encouraged to register and apply for financial support.**

**43rd Conference on Stochastic Processes and their Applications**
**July 24–28, 2023 in Lisbon, Portugal**
**w** https://www.spa2023.org/
Featuring talks by Louigi Addario-Berry (Schramm lecture), Riddhipratim Basu, René Carmona (Doob lecture), Jean-Dominique Deuschel, Massimiliano Gubinelli (Medallion lecture), Martina Hofmanova, Richard Kenyon (Medallion lecture), Gesine Reinert, Makiko Sasada, Sylvia Serfaty (Medallion lecture), and Horng-Tzer Yau (Lévy lecture). Doeblin & Itô prize lecturers to be announced.

**The Annual ASA/IMS Spring Research Conference (SRC) on Statistics in Industry and Technology** NEW
**May 24–26, 2023**
**Banff Centre, Alberta, Canada**
**w** https://sites.google.com/view/src2023/home
A three-day summit of talks and activities, the SRC is the annual meeting of the Section on Physical and Engineering Statistics (SPES) of the American Statistical Association (ASA), co-sponsored by the IMS. Although historically emphasizing industrial statistics, design of experiments, quality and reliability, the meeting increasingly emphasizes modern methods on statistics, machine learning and high performance computing in statistical methodology, with diverse applications encompassing all areas of applied sciences. The conference is intended to stimulate interactions among statisticians, researchers in the application areas, and industrial practitioners.

**IMS New Researchers Conference** NEW
**(23rd Meeting of New Researchers in Statistics and Probability)**
**August 2–5, 2023**
**University of Toronto, Canada**
**w** https://sites.google.com/site/linbowangpku/nrc-2023
The purpose of the conference is to promote interaction and networking among new researchers in statistics and probability. **Anyone who has received a PhD in or after 2018, or expects to by the end of 2023, is eligible to attend**, though participation is by invitation only. Participants from under-represented groups are especially encouraged to apply. The meeting will take place immediately before JSM Toronto. Apply via the website for a poster or speed-talk session.

### *At a glance:*

*forthcoming IMS Annual Meeting and JSM dates*

#### *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

**Third Workshop on Emerging Data Science Methods for Complex Biomedical and Cyber Data**
**March 16–17, 2023**
**Augusta, Georgia, USA**
**w** www.augusta.edu/mcg/dphs/workshop3/index.php
With the increasing importance of next-generation data, we strive to help students and young researchers develop analytical thinking, statistical reasoning, communication skills, and creativity through this Third Data Science Workshop. The workshop will be in the form of specific research overviews and lectures provided by leading experts who have done prominent work in the selected research topic areas. At the end of each of the two days, a panel discussion will be held, led by an expert panelist and all speakers of the day, for assimilating the various topics presented on the day and for addressing questions and comments from the audience. Workshop participants will learn state-of-the-art forefront data science research methods used in academia, industry, and government sector, facilitating them to be a more successful future workforce in STEM fields.

The workshop aims to educate and empower undergraduate and graduate students, postdoctoral fellows, and early career researchers and faculty members with emerging statistical methods to address the complex data arising from various fields, in particular, from biosciences and cyber science. The topics of the workshop include deep learning, statistical machine learning, differential privacy, Bayesian data integration and cybersecurity data modeling, among others.

**Southeastern Probability Conference (two in 2023)** UPDATED
**May 15–16, 2023 at Duke University, USA, *and***
**August 14–15, 2023 at University of Virginia, Charlottesville**
**w** https://services.math.duke.edu/~rtd/
May SEPC organized by Rick Durrett with Shankar Bhamidi (UNC), Michael Damron (Georgia Tech), and Evita Nestoridi (Stonybrook). Speakers: Amol Aggarwal (Columbia), Morgane Austern (Harvard), Emma Bailey (CUNY), Dor Elboim (Princeton, working with Allan Sly), David Harper (Georgia Tech, working with Michael Damron), Nina Holden (NYU), Chris Janjigian (Purdue), Philippe Sosoe (Cornell), and Yuxin Zhou (Northwestern, working with Auffinger). **Graduate students and postdocs can apply for 10–12 grants of up to $500 to partially support the cost of their attendance:** see website, apply ASAP.

**21st INFORMS/Applied Probability Society meeting** UPDATED
**June 28–30, 2023 in Nancy, France**
**w** https://informs-aps2023.event.univ-lorraine.fr/
Originally scheduled for July 2021. Featuring an **IMS Medallion Lecture by Sylvie Méléard** (Ecole Polytechnique) and the Marcel Neuts Lecture by Beatrice Meini (Università di Pisa); other Plenary Lectures by Frédéric Chazal (INRIA), Sean Meyn (University of Florida) and Amy R. Ward (University of Chicago). Tutorial speakers: Paul Embrechts (ETH Zürich) and Sarah Penington (University of Bath). Registration is open.

February 27: deadline for student support applications, and submission deadline for titles and abstracts of invited session talks.

March 6: submission deadline for abstracts of contributed talks.

March 13: submission deadline for posters.

April 10: notification of acceptance for student support grants, contributed talks and posters.

May 1: deadline for early-bird registration.

**Statistical Foundations of Data Science and their Applications: A conference in celebration of Jianqing Fan's 60th birthday**
**May 8–10, 2023**
**Princeton University, New Jersey, USA**
**w** http://fan60.princeton.edu/
The conference will bring together collaborators and leading researchers in statistics and data science. The conference will provide an excellent forum for scientific communications and promote collaborations among researchers in statistics and data science. The program covers a wide range of topics presenting recent developments and the state of the art in a variety of modern research topics on statistics and data science as well as their applications.

**WNAR 2023**
**June 18–21, 2023 in Anchorage, Alaska, USA**
**w** https://wnar.org/wnar2023
Scientific program chair: Audrey Hendricks, University of Colorado Denver. IMS program chair: Hua Zhou, UCLA. Local organizer: Jiaqi Huang, Alaska Department of Fish and Game. Chair of Student Award Committee: Charlotte Gard, New Mexico State University.

The 2022 WNAR/IMS meeting will be held in Anchorage, Alaska from Sunday, June 18 through Wednesday, June 21, 2023. The conference will be held at Hilton Anchorage in downtown Anchorage.

Please contact local organizer Jiaqi Huang (jiaqi.huang@alaska.gov), WNAR program chairs Audrey Hendricks and Wen (Rick) Zhou (wnarprogramchair@gmail.com), or IMS program chair Hua Zhou (huazhou@ucla.edu) for more information.

**ICSA 2023 China Conference**
**June 30–July 3, 2023**
**Chengdu, Sichuan, China**
**w** https://maths.swjtu.edu.cn/english/ICSA_2023_China_Conference/Conference_Introduction.htm
The 2023 ICSA China Conference will be held at Chengdu, Sichuan, China from June 30 to July 3, 2023. It is co-organized by the Southwest Jiaotong University. The conference venue is Jinniu Hotel (http://www.jnhotel.com/).

The theme of this conference is *"Data Science with Applications to Big Data Analysis and AI"*, in recognition of the big data era.

The executive and organizing committees have been working diligently to put together a strong and comprehensive program, including keynote lectures, invited sessions, poster sessions, junior researcher award session, and exciting social events. Our scientific program reflects recent challenges in statistics, business statistics, and biostatistics, which are related to the big data analysis. The conference will provide great opportunities for learning, networking and collaborations. Participants will share the thoughts and ideas with conference guests, and receive inspirations from old research ideas and develop new ones.

**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, Mark Holmes, Estate Khmaladze (chair), Krishanu Maulik, Spiro Penev, Masanobu Taniguchi, Lijiang Yang, and Nakahiro Yoshida—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.

**2023 ENAR/IMS Spring Meeting**
**March 19–22, 2023**
**Nashville, TN, USA**
**w** https://enar.org/meetings/future.cfm
Featuring an IMS Medallion Lecture by **Hongyu Zhao**, Yale School of Public Health.

**2024 ENAR/IMS Spring Meeting**
**March 10–13, 2024**
**Baltimore, MD, USA**
**w** https://enar.org/meetings/future.cfm

**WNAR2024**
**held in conjunction with the 2024 Graybill Conference**
**June 9–12, 2024**
**Fort Collins, Colorado, USA**
https://wnar.org/Meetings
The 2024 meeting of the Western North American Region of The International Biometric Society will be joint with the Graybill Conference. Local organizer: Rick Zhou, Colorado State University.

IMS annual meeting
**Bernoulli–IMS 11th World Congress in Probability and Statistics**
**August 12–16, 2024**
**Ruhr-University Bochum, Germany**
**w** TBC
The Institute of Mathematical Statistics Annual Meeting will be held at the 11th World Congress.

**IMS–APRM in Melbourne, Australia**
**POSTPONED TO JANUARY 2024**
The sixth Institute of Mathematical Statistics Asia Pacific Rim Meeting (IMS-APRM) was scheduled to take place in Melbourne, Australia in January 2021. Due to COVID-19 and travel restrictions, the conference has been **postponed until January 2024**. Exact dates to be confirmed.

**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 **monthly** seminars that take place via Zoom on Thursdays, typically 9.30am or 1.30pm [UK time]. 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/
Thursdays, 14:00 UTC/GMT [resuming in September]. Please subscribe to the mailing list for updates about the upcoming seminars and other events: https://www.owprobability.org/mailing-list

# Other meetings and events around the world

**ECM Networking Icebreaker at the BAMC 2023**
**April 2, 2023 in Bristol, UK**
**w** https://ima.org.uk/21068/ecm-networking-icebreaker-at-the-bamc-2023/
Welcome to the icebreaker event for Early Career Mathematicians (ECMs) at the British Applied Mathematics Colloquium (BAMC 2023), sponsored by the ECM Committee of the Institute of Mathematics and its Applications (IMA). We had a fantastic time last year at Loughborough, so much so that we are going to run the same event in Bristol. We are hosting the event at Design West the evening before the BAMC begins. We will start the event with quick opening speeches about the BAMC (and ECMs) from one of the Organising Committee and who the ECM Committee are and what they do for the IMA. Then we will start the activities, which include: Knowing me, knowing you; Mathematical Taboo; Celebrity Cameo; Mathematical Headbandz; and Shakespeare's Radio

**International Conference on Malliavin Calculus and Related Topics**
**June 12–16, 2023**
**Esch-sur-Alzette, Luxembourg**
**w** https://math.uni.lu/icmcrt/
The International Conference on Malliavin Calculus and Related Topics celebrates the work of David Nualart and Anton Thalmaier This event is the occasion to (re-)unite researchers from all around the world who are working on Malliavin calculus and related topics, and to celebrate the prolific careers of David Nualart and Anton Thalmaier. The scientific program consists in more than 20 talks by invited speakers over five days. Registration is now open on the website.

**10th International Purdue Symposium on Statistics and Celebration of the 60th Anniversary of the Department of Statistics**
**June 6–9, 2023**
**West Lafayette, Indiana, USA**
**w** https://www.stat.purdue.edu/symp2023/index.html
*Demystifying Data Science via Statistics: Theory and Applications*
The International Purdue Symposium on Statistics is a venerable tradition, an event started by Professor Shanti Gupta that has been held every five years at Purdue since the late 1960s, in an effort to further the development of the field of Statistics. The 2023 Purdue Symposium includes one day of workshops on June 6, followed by three days of sessions and plenary talks, June 7–9, and a variety of social activities.

**12th IMA International Conference on Modelling in Industrial Maintenance and Reliability (MIMAR)**
**July 4–6, 2023 in Nottingham, UK**
**w** https://ima.org.uk/20581/12th-mimar/
The 12th International Conference on Modelling in Industrial Maintenance and Reliability (MIMAR) will take place in Nottingham, UK from 4-6 July 2023. This event is the premier maintenance and reliability modelling conference in the UK and builds upon a very successful series of previous conferences. It is an excellent international forum for disseminating information on the state-of-the-art research, theories and practices in maintenance and reliability modelling and offers a platform for connecting researchers and practitioners from around the world. The submission deadlines for abstracts and the optional full paper for inclusion in the Conference Proceedings are listed on the website. All submissions are subject to rigorous review before an acceptance decision is made. We hope you can attend and we will provide a warm welcome in Nottingham in 2023.

**International Workshop on Applied Probability (IWAP2023)**
**July 7–10, 2023 in Thessaloniki, Greece**
**w** http://iwap2020.web.auth.gr/
The 10th International Workshop on Applied Probability (IWAP2023), which was postponed in 2020 due to COVID-19, will take place in Thessaloniki, 7–10 June 2023. Researchers interested in the fields of (Applied) Probability and Statistics can participate either by organizing a session (four talks per session) or by contributing a talk. Information about the conference is provided on the conference website above.

**ASMDA 2023 Conference and Demographics 2023 Workshop**
**June 6–9, 2023**
**HYBRID FORMAT: Heraklion, Crete, Greece, and also online**
**w** http://www.asmda.es/
The 20th conference of the Applied Stochastic Models and Data Analysis (ASMDA2023) International Society and the Demographics 2023 Workshop. The conference will focus on new trends in theory, applications and software of Applied Stochastic Models and Data Analysis. The abstract submissions deadline is extended to 28 February 2023.

# Employment Opportunities

### Australia: Sydney
**University of Sydney**
Associate Professor or Professor in Computational Algebra
https://jobs.imstat.org/job//67379533

### China: Shenzhen
**Georgia Tech Shenzhen Institute**
Statistics and Operations Research tenure-track faculty at Georgia Tech Shenzhen Institute
https://jobs.imstat.org/job//67701596

### Denmark: Aarhus
**Aarhus University**
Postdoctoral positions in Mathematics and Statistics
https://jobs.imstat.org/job//67553561

### Germany: Heidelberg
**Heidelberg University, Faculty of Mathematics and Computer**
Full Professorship (W3) for Mathematical Foundations of Machine Learning (f/m/d)
https://jobs.imstat.org/job//68053193

### Hong Kong: Shenzhen
**The Chinese University of Hong Kong, Shenzhen**
Tenured or tenure-track positions (all ranks)
https://jobs.imstat.org/job//68010617

### United States: Fayetteville, AR
**University of Arkansas**
Assistant Professor, Mathematical Sciences (Two Open Positions)
https://jobs.imstat.org/job//67379333

### United States: San Diego, CA
**University of California San Diego**
Assistant Teaching Professor
https://jobs.imstat.org/job//67584061

### United States: Berkeley, CA
**University of California, Berkeley Department of Statistics**
Lecturer in Statistics, Department of Statistics, Division of Computing, Data Science and Society
https://jobs.imstat.org/job//67968864

### United States: New Haven, CT
**Yale University School of Public Health**
Assistant Professor
https://jobs.imstat.org/job//67569877

### United States: New Haven, CT
**Yale School of Public Health**
Assistant Professor Investigator Track Position in Biostatistics
https://jobs.imstat.org/job//67601236

### United States: Chicago, IL
**University of Chicago Data Science Institute**
Preceptor in Data Science
https://jobs.imstat.org/job//68077382

### United States: Boston, MA
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https://jobs.imstat.org/job//67398842

### United States: Boston, MA
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### United States: Chapel Hill, NC
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Joint Faculty Hire in Statistics and Operations Research and the School of Data Science and Society
https://jobs.imstat.org/job//67712495

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**University of North Carolina at Chapel Hill**
Pranab K. Sen Distinguished Visiting Professorship
https://jobs.imstat.org/job//68062748

### United States: South Orange, NJ
**Seton Hall University**
Assistant Professor in Applied Mathematics
https://jobs.imstat.org/job//68077031

### United States: Klamath Falls, OR
**Oregon Tech**
Instructor - Mathematics
https://jobs.imstat.org/job//67403510

### United States: Brookings, SD
**South Dakota State University**
Assistant Professor - Statistics
https://jobs.imstat.org/job//67913619



# 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

## 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

## March 2023

ims March 8–11: Tucson, USA. **2023 Seminar on Stochastic Processes** w https://ssp2023.math.arizona.edu/home

ims March 16–17: Augusta, GA, USA. **Emerging Data Science Methods for Complex Biomedical and Cyber Data** w www.augusta.edu/mcg/dphs/workshop3/index.php

ims March 22–25: Nashville, USA. **2023 ENAR/IMS Spring Meeting** w http://www.enar.org/meetings/spring2023/

## April 2023

April 4–6: Livingstone, Zambia. **2023 Zambia Conference: Better Lives for 2030** w https://www.zamstats.gov.zm/2023-iaos-isi-conference/

## May 2023

ims May 8–10: Princeton University, NJ, USA. **Statistical Foundations of Data Science and their Applications** w http://fan60.princeton.edu/

ims May 15–16: Duke University, NC, USA. **Southeastern Probability Conference I** w https://services.math.duke.edu/~rtd

May 23–26: St. Louis, Missouri, USA. **Symposium on Data Science and Statistics** w https://ww2.amstat.org/meetings/sdss/2023/index.cfm

NEW ims May 24–26: Banff, Canada. **ASA/IMS Spring Research Conference (SRC) on Statistics in Industry and Technology** w https://sites.google.com/view/src2023/home

May 30–June 3: State College, PA, USA. **USCOTS2023: United States Conference on Teaching Statistics** w https://www.causeweb.org/cause/uscots/uscots23

## June 2023

NEW June 6–9: West Lafayette, USA. **10th International Purdue Symposium on Statistics** w https://www.stat.purdue.edu/symp2023/index.html

NEW HYBRID June 6–9: Heraklion, Greece, and online. **ASMDA 2023 Conference and Demographics 2023 Workshop** w http://www.asmda.es/

NEW June 12–16: Esch-sur-Alzette, Luxembourg. **International Conference on Malliavin Calculus and Related Topics** w https://math.uni.lu/icmcrt/

ims June 18–21: Anchorage, Alaska, USA. **WNAR2023** w https://wnar.org/wnar2023

ims June 28–30: Nancy, France. **21st INFORMS/APS Meeting** w https://informs-aps2023.event.univ-lorraine.fr/

ims June 30–July 3: Chengdu, China. **ICSA 2023 China Conference** w https://maths.swjtu.edu.cn/english/ICSA_2023_China_Conference/Conference_Introduction.htm

## July 2023

July 3–7: Warsaw, Poland. **34th European Meeting of Statisticians (EMS)** w https://ems2023.org

Continues on **page 30**

# International Calendar *continued*

## July 2023 continued

NEW July 4–6: Nottingham, UK. **Modelling in Industrial Maintenance and Reliability** w ima.org.uk/20581/12th-mimar/

NEW July 7–10: Thessaloniki, Greece. **International Workshop on Applied Probability (IWAP2023)** w http://iwap2020.web.auth.gr/

July 10–14: São Paolo, Brazil. **16th CLAPEM: Latin American Congress of Probability & Mathematical Statistics** w https://www.ime.usp.br/~16clapem/

July 15–20: Ottawa, Canada. **ISI World Statistics Congress** w https://www.isi2023.org/conferences/ottawa-2023/

ims July 24–28: Lisbon, Portugal. **43rd Conference on Stochastic Processes and their Applications** w https://www.spa2023.org/

## August 2023

NEW ims August 2–5: Toronto, Canada. **IMS New Researchers Conference** w sites.google.com/site/linbowangpku/nrc-2023

ims August 5–10: Toronto, Canada. **IMS Annual Meeting at JSM 2023** w https://ww2.amstat.org/meetings/jsm/2023/

ims August 14–15: University of Virginia, USA. **Southeastern Probability Conference II** w https://services.math.duke.edu/~rtd

August 20–25: Tokyo, Japan. **ICIAM2023: 10th International Congress on Industrial and Applied Mathematics** w https://iciam2023.org/

## September 2023

September [TBC]: Ljubljana, Slovenia. **23rd European Young Statisticians Meeting** w https://sites.google.com/view/eysm2023

## December 2023

NEW ims December 18–21: Lisbon, Portugal. **2023 IMS International Conference on Statistics and Data Science (ICSDS)** w https://sites.google.com/view/icsds2023

## January 2024

POSTPONED ims January dates TBC (postponed from January 2021): Melbourne, Australia. **IMS Asia Pacific Rim Meeting (IMS-APRM2021)** w http://ims-aprm2021.com/

## March 2024

ims March 10–13: Baltimore, USA. **2024 ENAR/IMS Spring Meeting** w http://www.enar.org/meetings/future.cfm

## June 2024

ims June 9–12: Fort Collins, Colorado, USA. **WNAR2024, joint with Graybill Conference** w https://wnar.org/meetings

## July 2024

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

July 7–14: Sydney, Australia. **15th International Congress on Mathematics Education** w https://icme15.com/home

## August 2024

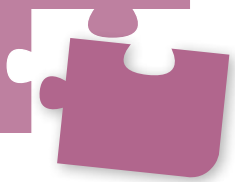
ims August 3–8: Portland, OR, USA. **JSM 2024** w http://www.amstat.org/ASA/Meetings/Joint-Statistical-Meetings.aspx

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/

**Are we missing something? If you know of any statistics or probability meetings which aren't listed here, please let us know. You can email the details to Elyse Gustafson at ims@imstat.org, or you can submit the details yourself at https://www.imstat.org/ims-meeting-form/ We'll list them here in the Bulletin, and on the IMS website too, at imstat.org/meetings-calendar/**



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### 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 $130 is added to the dues of members for each scientific journal selected ($87 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.

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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 2023 are available to *The Annals of Applied Probability* ($245), *The Annals of Applied Statistics* ($245), *The Annals of Probability* ($245), *The Annals of Statistics* ($245), *Statistical Science* ($202), and *IMS Bulletin* ($115). **General subscriptions** are for libraries, institutions, and any multiple-readership use. Institutional subscriptions for 2023 are available to *The Annals of Applied Probability*, *The Annals of Applied Statistics*, *The Annals of Probability*, and *The Annals of Statistics* (each title $563 online only / $707 print+online), *Statistical Science* ($324/$403), and *IMS Bulletin* ($167 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.

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**Advertising job vacancies:** A single 60-day online job posting costs just **$355.00**. 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

**Advertising meetings, workshops and conferences:** Meeting announcements here and on the IMS website at https://imstat.org/meetings-calendar/ are free. Submit your meeting details at https://www.imstat.org/ims-meeting-form/

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|---|---|---|---|
| 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 |

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# the next issue is April/May 2023

*Read IMS Bulletin articles online at https://imstat.org/news*

## DEADLINES for submissions

**March 15,** then **May 1**

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**Articles**



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