

# IMS Bulletin

#### October/November 2023

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Read it online: imstat.org/news

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## 2024 Lawrence Brown Awards

We are pleased to announce the following IMS members have been selected to receive the 2024 IMS Lawrence D. Brown PhD Student Award: **Filippo Ascolani**, Bocconi University; **Chanwoo Lee**, University of Wisconsin–Madison; and **Yuling Yan**, Massachusetts Institute of Technology.

The award will fund their travel to next year's IMS Annual Meeting, which takes place at the Bernoulli–IMS 11th World Congress in Probability and Statistics, in Bochum, Germany. They will each present a paper in the IMS Lawrence D. Brown PhD Student Award invited session.

Filippo Ascolani's talk will be titled, "Full-range borrowing of information priors." Chanwoo Lee will be talking about "Statistical and computational rates in high rank tensor estimation." Finally, Yuling Yan's paper is titled, "Learning Gaussian Mixtures Using the Wasserstein–Fisher–Rao Gradient Flow."

Filippo said, "I am deeply honoured to be receiving this prestigious award, and I hope I will prove to be worthy of such recognition. A large part of this award goes to my PhD advisors, Antonio Lijoi and Igor Prünster, whom I cannot thank enough. I am looking forward to meeting the IMS community in Bochum!"



Filippo Ascolani



nanwoo Lee



Yuling Yan

Chanwoo added, "I'm truly honored to receive this award, and I want to express my gratitude to everyone who has supported me. In particular, I would like to thank my advisor Miaoyan Wang for her encouragement and support during my PhD. I am also excited to attend the meeting, connect with researchers and share their insights."

Yuling is also "deeply honored" to receive the award. He thanked his advisors, Yuxin Chen and Jianqing Fan, "for their unwavering support throughout my PhD journey at Princeton. This award is as much theirs as it is mine. I am looking forward to attending the Bernoulli–IMS World Congress in Probability and Statistics, an invaluable opportunity to engage with and learn from the leading experts in the field."

#### Apply for a PhD Student travel award for JSM2025

If you're a PhD student, the deadline for the 2025 IMS Lawrence D. Brown PhD Student Award (for the session at JSM2025) is May 1, 2024; application information is at https://imstat.org/ims-awards/ims-lawrence-d-brown-ph-d-student-award/

#### Call for papers: 2024 Bernoulli–IMS 11th World Congress in Probability and Statistics

If you'd also like to present your research at the World Congress next August, read the call for abstracts for contributed talks, posters, and organized contributed paper sessions on page 3, or at https://www.bernoulli-ims-worldcongress2024.org/

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## **IMS Members' News**

#### ISI membership elections: second round 2023

Congratulations to the following IMS members who have been chosen as Elected Members of the International Statistical Institute in the second round elections of 2023. They are Listed with their country, they are: **Xueqin Wang** (China), **Vicky Fasen-Hartmann** and **Mats Julius Stensrud** (Switzerland), **Lu Wang** and **Xiaoke Zhang** (USA). Read the complete list at https://www.isi-web.org/article/members-news/2023-second-round-newly-elected-members

#### Alison Etheridge wins IMA–LMS David Crighton Award

IMS Fellow and former president Alison Etheridge FRS, OBE, has been selected by the Institute of Mathematics and its Applications (IMA) and the London Mathematical Society (LMS) to receive the 2023 David Crighton Medal. The announcement on the IMA website says, "Alison is a leading researcher and a world expert on stochastic processes and their applications. She is an excellent lecturer, and her skills as a researcher and educator have attracted over 30 of graduate students and postdocs over the years. [...] This award is not only for services to mathematics, but also to the mathematical community; Alison has played an active role in encouraging women in mathematics, she has provided excellent guidance and mentoring to female PhD students and junior colleagues, who now have successful careers in their own right. By sharing her experiences, about her research and career path, she has shown how she balanced her career and family life, providing suggestions on how partners of women in mathematics and employers, can be supportive of them. Through all of the above, and much more, Alison has been an effective role model and mentor for women in mathematics; her appointments in important roles during her career signal the high esteem in which she is held and the mathematical community's recognition of her dedication and abilities as a leader in her field, and a worthy recipient of this prestigious award."

#### **ISI Mahalanobis Award to Arup Bose**

**Arup Bose**, Professor of Theoretical Statistics and Mathematics at the Indian Statistical Institute, Kolkata as been selected to receive the 2023 International Statistical Institute Mahalanobis International Award. The Government of India sponsors the award, which, managed by the International Statistical Institute, is presented every other year at the International Statistical Institute World Statistics Congress. The Mahalanobis Award recognizes an individual for lifetime achievements in statistics in a developing country or region.



Arup Bose

The 2023 ISI Selection Committee, chaired by Professor Kerrie Mengersen, selected Professor Arup Bose in recognition of the outstanding nature of his research, his original contributions to both theory and methods which have found applications in diverse fields, his national and international recognition through other awards, his impressive professional service to journals and societies, his supervision of many successful students, and his leadership and inspiration in his home country of India.

You can read more about the award and about Professor Bose at https://www.isi-web. org/article/competitions-awards/2023-mahalanobis-international-award

# Present your research at the 2024 World Congress

#### Call for contributed talks, posters and organized contributed paper sessions

The Bernoulli-IMS 11th World Congress in Probability and Statistics will be held from 12

to 16 August 2024 on the campus of Ruhr University Bochum, Germany. The World Congress



will be the major international conference in the area of Probability and Statistics in 2024, where scientists from around the globe will gather to exchange ideas and to present the results of their most recent research. For more details on the programme, please visit the conference website https://www.bernoulli-ims-worldcongress2024.org/

In addition to the invited part of the scientific program, the World Congress will offer ample opportunity for the participants to present the results of their research work. At this point, we invite researchers to submit abstracts for contributed talks, posters, and organized contributed paper sessions.

**Contributed Talks** will be presented in parallel sessions of four talks each, with 20 minutes per talk, followed by five minutes' discussion time.

**Posters** will be on display for the entire duration of the conference. We will allocate special time slots as poster sessions, when the authors are expected to be present at their posters. Authors of posters are encouraged to prepare a short teaser video (three minutes maximum) on the contents of their poster. These videos will be available on the conference website.

**Organized Contributed Paper Sessions:** Researchers are encouraged to submit proposals for organized contributed paper sessions, devoted to a topic of strong current research interest. Organized contributed paper sessions will have four talks of 20 minutes, followed by a five-minute discussion. Proposals should contain the names of the four speakers together with a short abstract outlining the topic of the session. Before submission of the proposal, the potential speakers should have agreed to present a talk in the proposed session.

**Deadlines:** Abstracts for contributed talks and posters: deadline 15 February 2024, decision before 31 March 2024. Proposals for organized contributed paper sessions: deadline 30 November 2023, decision before 15 December 2023. Registration of speakers/ presenters of contributed talks/posters: deadline 30 April 2024.



In the middle of Bochum stands the Exzenterhaus, a commercial office building constructed on top of a WWII-era air-raid shelter. The building rises 15 storeys above the top of the bunker and at an overall height of 90.5 metres, it is the tallest building in Bochum. The name Exzenterhaus means "eccentric house" in German (in the sense of the Latin "ex centro", meaning off-centre).

D = 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: Moulinath Bannerjee https://imstat.org/sts @https://projecteuclid.org/ss
- IMS Collections Mhttps://projecteuclid.org/imsc
- IMS Monographs and IMS Textbooks: Mark Handcock https://www.imstat.org/journals-andpublications/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 Mhttps://projecteuclid.org/euclid.ejp
- Electronic Communications in Probability: Siva Athreya
- Mhttps://projecteuclid.org/euclid.ecp
- Journal of Computational and Graphical Statistics: Galin Jones, Faming Liang https://www.amstat.org/ ASA/Publications/Journals.aspx Dilog 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 Mhttp://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 Mhttps://projecteuclid.org/euclid.ba
- Bernoulli: Davy Paindaveine https://www.bernoullisociety.org/ ©https://projecteuclid.org/bj
- Brazilian Journal of Probability and Statistics: Mário de Castro https://imstat.org/bjps @https://projecteuclid.org/bjps

#### **IMS-Affiliated Journal**

- Observational Studies: Nandita Mitra Mhttps://obs.pennpress.org/
- Probability and Mathematical Statistics: Krzysztof Bogdan, Krzysztof Dębicki © http://www.math.uni.wroc.pl/~pms/
- Stochastic Systems: Shane Henderson Mhttps://pubsonline.informs.org/journal/stsy

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## **IMS Awards: Why Your Nomination is Important**

IMS Past-President Peter Bühlmann and the former Chair of the Committee on Equality and Diversity Nicole Lazar write: IMS has many awards and honors for early, mid-career and senior researchers. While these awards recognize excellence of individuals, they should represent and showcase the breadth of outstanding achievements of our members from many facets. Thus, it is of the utmost importance that the nomination pools for each IMS award be broad and diverse. Unfortunately, this has not been the case in the last few years, as you may recall reading in Peter's "President's Corner" article in the June/July *Bulletin*, on the 2023 class of IMS Fellows, https://imstat.org/2023/05/16/presidents-corner/.

This is an *urgent call* for participation in the nomination process for IMS awards and honors. We sincerely hope that you will contribute to make IMS more broad, diverse and multi-faceted\* particularly with respect to awards and honors. Here are some thoughts on why you should make a nomination for an IMS award or honor.

- Perhaps you feel, as we do, that you have received from IMS and the community in statistics and probability in the past, and you want to give back to others in the community. If so, it is time to nominate.
- You may think, as we do, that IMS should have more women or other minorities (in the broad sense) among the awardees. If so, you can make a difference by making a relevant corresponding nomination.
- 3. You may feel a need, as we do, that IMS awards go to *all* types of excellent research, including application oriented and interdisciplinary work, as well as machine learning and data science. You should then make a corresponding nomination.
- 4. There may be excellent researchers in your field of expertise who do not have easy access to renowned nominators because they work in more isolated and less visible places in the world. If you know of such persons, you should nominate them.
- 5. If you are making one or several nominations because you think it is important for many good reasons, spread your view about nominations among your colleagues and encourage them to do a nomination as well!
- 6. There are shy people with excellent achievements. In scientific cultures where it is common to talk openly about awards, honors, and nomination processes, such persons could "raise their voices."

You can find out more about IMS awards and honors, with corresponding nomination deadlines, at imstat.org/ims-awards/, imstat.org/honored-ims-fellows/nominations-for-ims-fellow/ and imstat.org/ims-special-lectures/

Together, we can work to make IMS more diverse with respect to gender, origin, geographical location of working place, scientific fields and cultures. One concrete and important step is to have such diversity in the nomination pools of IMS Awards and Honors.

## **The IMS Awards and Honors**

The Institute of Mathematical Statistics recognizes and celebrates excellence in our members at all stages of their careers. We encourage you to **consider diversity and breadth** when you nominate for these awards.

The **Peter Gavin Hall IMS Early-Career Prize** was created to honor the significant role Peter Hall played in mentoring young colleagues at work and through professional society activities. The Prize recognizes early-career research accomplishments and research promise in statistics, broadly construed. Next deadline **December 1**, 2023: https://www.imstat.org/ims-awards/peter-gavinhall-ims-early-career-prize/

The **Tweedie New Researcher Award** funds travel to present the Tweedie New Researcher Invited Lecture at the IMS New Researchers Conference. It was created in memory of Richard Tweedie, who mentored many young colleagues. New researchers (PhD awarded in 2019–23) who are members of IMS are eligible. The next deadline is **December 1**, 2023: https://www.imstat.org/ims-awards/ tweedie-new-researcher-award/

A candidate for **IMS Fellowship** shall have demonstrated distinction in research in statistics or probability, by publication of independent work of merit; or a candidate of well-established leadership whose contributions to the field of statistics or probability other than original research shall be judged of equal value; or a candidate of well-established leadership in the application of statistics or probability, whose work has contributed greatly to the utility and appreciation of these areas. Deadline **January 31**, 2024: https://imstat.org/honored-ims-fellows/ nominations-for-ims-fellow/

The **Carver Medal**, created by the IMS in honor of Harry C. Carver, is for exceptional service to the IMS. Nominations deadline **February 1**, 2024: https://www. imstat.org/ims-awards/harry-c-carver-medal/

There are several **IMS Named and Medallion Lectures:** Wald Memorial Award & Lecture; IMS Grace Wahba Award & Lecture; the Neyman, Rietz, Blackwell and Le Cam Awards and Lectures; and the eight Medallion Awards & Lectures. Next nomination deadline is **October 1**, 2024. See https://imstat.org/ims-special-lectures/

<sup>\*</sup> See also Peter's IMS Presidential Address 2023 article in the September IMS Bulletin, https://imstat.org/2023/08/31/presidential-address-2023-peter-buhlmann/

## **IMS Early-Career Awards: apply now**

As well as the IMS awards seeking nominations [*see previous page*], applications are also open for these awards for early-career researchers.

#### IMS New Researcher Travel Award: https://www.imstat.org/imsawards/ims-new-researcher-travel-award/

The purpose of the IMS New Researcher Travel Award is to fund travel and possibly other expenses to present a paper or a poster at an IMS sponsored or co-sponsored meeting for those who otherwise would not be able to attend the meeting. The travel awards are available to IMS members who are New Researchers (i.e. PhD awarded in 2020–2024). Application deadline: February 1, 2024.

**IMS Hannan Graduate Student Travel Award:** https://www.imstat. org/ims-awards/ims-hannan-graduate-student-travel-award/ The purpose of the IMS Hannan Graduate Student Travel Award is to fund travel and registration to attend and possibly present a paper or a poster at an IMS sponsored or co-sponsored meeting. Presentation of a paper/poster is encouraged, but not required. The travel awards are available to IMS members who are graduate students (seeking a Masters or PhD degree) studying some area of statistical science or probability who have not yet received a PhD degree. Application deadline is February 1, 2024.

**IMS Lawrence D. Brown PhD Student Award:** https://www.imstat. org/ims-awards/ims-lawrence-d-brown-ph-d-student-award/ Lawrence D. Brown 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. Eligible applicants for this award 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 winner. Application deadline is May 1, 2024. [*See the cover article for more about the 2024 winners.*]

## **International Day for Women in Statistics and Data Science**

The Caucus for Women in Statistics and Data Science (CWS) is very happy to invite you and your colleagues to the second conference celebrating the International Day for Women in Statistics and Data Science (IDWSDS). This 24-hour free online conference on October 10 celebrates women around the world. This year there are representatives from 22 countries. The conference starts at midnight UTC on October 10 and ends a little after midnight UTC October 11. The organizers hope you will join at times that are convenient for you, wherever you are in the world, and help celebrate October 10 as the International Day for Women in Statistics and Data Science.

The tentative program schedule includes the following sessions: A new class of orthogonal space-filling designs (China); Women in Statistics in Korea, WISK (Korea); Fostering diversity and inclusion in Japan's data science landscape (Japan); Female students' participation in statistics and data science: A reflection (Indonesia); Lessons learned: walking together towards success with collaboration! (Australia); Networking for success (Australia); Monash EBS PhD contest (Australia); Empowering insights: celebrating women in statistics and data science (India); A simulation study to explore the effect of repeated use of individual patient data in a MAIC-adjusted network meta analysis (Bangladesh); Young researchers from India (India); Panel on careers in statistics and data science across academia, government and industry (India); The profound impact of my mentor on my journey (Pakistan); Estimating international migration flows with administrative data (UK); Change starts with awareness (Italy); Portuguese contributions in statistics and data science (Portugal); Data analytics consulting in Nigeria: projects, challenges, solutions, and lessons (Nigeria); Aspects of biplots in multidimensional visualization (South Africa); Statistical models for conservation translocations (UK); Women and Big Telescopes (UK); The role of creativity

and innovation in statistics and data science (USA); Collaborating as a woman in statistics (UK); Journey of early career women in the pharmaceutical industry and their paths forward (USA); Junior advances in Bayesian methods for complex data (UK); Florence Nightingale Day (USA); Recent developments in multivariate regression (USA); FENStatS women in action (Portugal/Spain); Empowering women's position in scientific research and statistical organizations for a better world: focusing on selected European countries (Croatia); Research at NIH from women statisticians (USA); Bilinear regression models useful in the analysis of longitudinal and clustered longitudinal data (Canada); Ten simple rules for teaching data science (Canada); A historical perspective on the role of women in statistics (Argentina); Networking session (USA); Being a woman in Brazil: statistics on gender and challenges (Brazil); Exploring gender disparities in health, education, and employment in Costa Rica (Costa Rica).

See https://www.idwsds.org/ for details.

## **Updates on 2023 ICSDS**

The **2023 IMS International Conference on Statistics and Data Science** (ICSDS) takes place December 18–21, 2023, in Lisbon, Portugal. Program co-chairs Regina Liu and Annie Qu report on the latest developments:

#### **Applications for the ICSDS Junior Researcher Travel Fund**

To ensure inclusivity and accessibility of ICSDS to junior researchers all over the world, IMS is pleased to announce a new travel support fund for junior faculty and post-docs who do not have other forms of institutional support. This fund is generously sponsored by the Industry Friends of IMS (IFoIMS: https://imstat.org/industryfriends-of-ims-ifoims/). Please see https://www.icsds2023.com/ for the link submit your application, no later than October 20.

#### **Congratulations to Student Travel Award awardees**

The applications for Student Travel Awards increased drastically this year, covering many areas of statistics and data science. The award committee regrettably had to decline many very high-quality applications due to the limited number of awards, even though the conference was able to increase the number of awards to 12 from 10 last year, with the support from the Industry Friends of IMS (IFoIMS). Congratulations to the following 12 IMS 2023 ICSDS Student Travel Award awardees:

Alexis Boulin, Laboratoire Jean Alexandre Dieudonné (France) Matthieu Bulté, University of Copenhagen (Denmark) Onrina Chandra, Rutgers University (USA) Michel Groppe, University of Göttingen (Germany) Yu Gui, University of Chicago (USA) Chiara Gaia Magnani, University of Milan–Bicocca (Italy) Manuel Mueller, University of Cambridge (UK) Arpan Singh, IIT Hyderabad (India) Paul Rognon Vael, Universitat Pompeu Fabra (Spain) Lasse Vuursteen, TU Delft (The Netherlands) Xin Xiong, Harvard T.H. Chan School of Public Health (USA) Yuming Zhang, University of Geneva (Switzerland) The awardees will present their papers in the special Student Travel Award sessions and receive award certificates with US\$800 each during the award ceremony on December 21.

#### **Registration and Abstract submission**

Registration is open: https://www.icsds2023.com/registration (the regular registration deadline is October 31). To be listed on the conference program, abstracts should be submitted by October 31.



## Radu's Rides: Summer Pitfalls

Contributing Editor Radu Craiu writes: If there is a time to let one's hair down and unclench the fists, it must be summer, that singular season when the only issue one must tiptoe around is the hot sand on a sun-drenched beach. But there must be a Law of Conservation of Angst hidden deep inside my head, since I still managed to find reasons to toss and turn at night. And for the sake of this column, I will pluck out those anxieties that are vaguely related to statistical obsessions.

My family shares a lot of things, including a Kindle account where all year long we download books in the hope of reading them in the Summer. I could dwell on the memory-less process that allows us to keep the hope alive year after year, but I have more hopeless things to talk about. Keeping on with the forgetfulness program, we are usually foggy about who purchased what on some blistery February day, when they were dreaming of trading long cold nights for Long Island iced teas. So here I am, finally settled in my long chair, hoping to get into that crime novel that I vaguely remember adding to my list. I patiently absorb the first 5% of the book which talks perfunctorily about teen alienation and conflicts with their parents. As I am about to fall asleep, a disappearance is mentioned in passing, so my tired annoyance is allayed for another 5% of the book while a problematic teenager has a shaky conversation at night with a disturbed, yet good-looking, stranger on some rooftop placed at a large, crime-appropriate, height. While I am trying hard to guess the motives of the murder I am about to read about, another 9% of the book is absorbed by a weary and increasingly worried mind that, eventually, decides to ask around if someone else has bought this book. While the someone else who did wants to remain anonymous, I can confidently say that they mercilessly mocked me for having read 20% of the book before I could figure out that my crime novel was in fact *their* teenage romance. The criminal writing and my subsequent embarrassment notwithstanding, it dawned on me how persistent a prior can be. It wasn't even a strong one, since I sort of remembered the title being associated with the novel I wanted to read. There is inertia built into our thinking that tends to allow mistakes that are not immediately damaging or threatening to us. This brought to mind my early programming days when bugs that produced too-good-to-be-true results took a lot longer to detect than their antithetic ones. Alas, the fallacy of "beneficial errors" is often revealed, since most mistakes end up hurting us in the long run—just ask how long it took me to venture into another vaguely reminisced e-book purchase!

If there is one thing we can say about the world it's that we are increasingly hearing from people with strong priors who are losing patience way before hearing 20% of the opposing argument. Of course, this is not new since behavioural economists and psychologists have spent hundreds of experimental hours and thousands of Nobel dollars revealing the extent of our gut's prior opinion influence on our decisions. Perhaps we're fighting both biology and history when we say that the romantic idea of a desperate hero who wins over their opponent only with their enthusiasm and conviction, despite not having any training, weapons, or better things to do, doesn't translate well into the realm of ideas.

Moving away from the beach and deflated by my monumental literary failure, I decide to soothe my misery using the well-known remedy of retail therapy. I am momentarily wary of being in a farflung country where my understanding is produced by strong priors rather than data. However, as you are likely aware, we live in an age where technology rescues us come hell or high water, so emboldened by the zeitgeist I venture on. Shopping is easy, unless you are looking for specific items like, say, shoe insoles or lactose-free milk, which, for whatever reason, have unrecognizable spelling in those languages I know nothing about. So here I am excitedly looking for Bulgarian in my translation app when I realize it's not there. In fact, it exists on some server in California, but a significant download is necessary for me to use it and my phone signal is modest, bordering on not there. As I drive back, my face reddened by the shopping failure (adios, therapy!) and bludgeoning heat, I decide to ask Siri to play some Julio Iglesias, but I am not sure which pronunciation I should use. It turns out it doesn't matter as none of them work. When I stand cluelessly in front of a shelf full of indecipherable milk cartons or shout "Hey Siri" uselessly into the void, I realise that the excitement brought by technology's promises can be surpassed only by the despondency brought by its failures.

All these remind me of my family's 30-year-old Fiat 850 my parents tenaciously held on to, while being thoroughly bamboozled by a car mechanic who ended up working on it almost weekly. Their situation was the result of strong priors about longevity of a car that was once upon a time nice and the blind belief that technological fixes, brought into action by overbearing operators, could improve their lives. Sometimes I wonder if my life is any different.



## Lines from Layla Lessons from CrossFit

## Contributing Editor Layla Parast is aiming for excellence...by being medium-good:

A few years ago, Netflix recommended to me a documentary called "Fittest on Earth: A Decade of Fitness," which was about the 2017 CrossFit Games. I knew what CrossFit was—it involved running around carrying balls and kettlebells and lots of jumping, and I had no interest in doing it myself, but I watched it. My first thought was-these people are completely insane. But by the end, I was intrigued. I had never seen people who could do so much-running, swimming, lifting heavy weights, gymnastics. I knew people who were fast runners, and they generally could barely lift anything. And I knew people who could lift heavy, and they could barely run 400 meters. I had always thought that there was a tradeoff: you have to choose one and accept that you can't be good at everything, much like every statistics paper I have written. But CrossFit seemed to be more about being medium-good at everything. And as someone who has never felt very good at any one thing, I was very attracted to the idea of being medium-good at several different things.

I had especially never seen so many powerful women. These women could lift almost twice their bodyweight over their heads, run six-minute miles, and walk across a football field on their hands. After 35 years of having a mindset that "smaller is better" in terms of body image, CrossFit completely changed my attitude. I have tracked my food intake on and off since I was 13 years old. I have a plot of my weight since I was in high school (in R, and smoothed, of course). And I am not abnormal<sup>1,2</sup> (well, maybe just the R part). To instead be introduced to a culture that says it is not about what your body looks like, it is about what your body *can do*, was an enormous mental shift.

Competing in CrossFit is all about statistics. Every year anyone in the world can participate in the CrossFit Open (https://games. crossfit.com/open/overview), an online competition where you perform three specified workouts where one workout is released each weekend over three weeks and you have three days to complete each workout. You can try as many times as you want within those three days. You have to have someone judge you or record yourself doing it. Once you input your score, you are ranked, either by how fast you did it or how far you got in the workout (or weight lifted), among your fellow competitors. In 2023, over 323,000 people around the world competed in the Open. First place on a workout gets one point, second place gets two points, last place gets 323,000 points. In the end, your total points across the three workouts are summed and the top 10% of competitors overall (lowest scores) move on to the next stage, Quarterfinals. Here, you have five workouts that you have to complete in three days, and they tend to be much harder, heavier, and involve higher-level skills. From here, the top athletes move on to in-person regional Semifinals and finally, the CrossFit Games.

While the athletes who make it to the CrossFit Games are truly exceptional, it is a great achievement to "make the top 10%" alone, qualifying from the Open to Quarterfinals. A common question

Joanna Dubai / Pixaba



that comes up is, given that I finished in the Xth percentile on the first workout and the Yth percentile on the second workout, where do I need to finish in the third workout to make the top 10%? This turns out to be quite a hard question. This season I made a Shiny app for some friends (and myself) to try to answer that question

 Neumark-Sztainer, D., Wall, M., Larson, N. I., Eisenberg, M. E., & Loth, K. (2011). Dieting and disordered eating behaviors from adolescence to young adulthood: findings from a 10-year longitudinal study. *Journal of the American Dietetic Association*, **111**(7), 1004–1011.

2 Neumark-Sztainer, D., & Hannan, P. J. (2000). Weight-related behaviors among adolescent girls and boys: results from a national survey. *Archives of Pediatrics & Adolescent Medicine*, **154**(6), 569–577.

[https://laylaparast.shinyapps.io/CFopen/]. First of all, you could simply find the Z such that the average of X, Y, and Z is at the  $90^{th}$ percentile. But that's not quite right because it really depends on how the people above you and below you on the first and second workout moved. Let's say you are at the 90<sup>th</sup> percentile for the first and second workout. One might say you are then at the 90<sup>th</sup> percentile overall after those two workouts. But if everyone who finished better than you on the first workout then finished worse than you on the second workout, you will be higher than 90<sup>th</sup>. Your ending percentile depends on how everyone else does around you. Now, we can imagine that the distribution of other people's scores around you from workout to workout is uniform, but this is an incorrect assumption because competitors in the top 1-2% will pretty much always be in the top 1-2% in every workout. Similarly, people in the bottom 20-50% will likely be there in every workout. I ended up calculating this assuming that the top 1% are always the top 1% in every workout and that the people who finish above you in a workout also finished above you in past workouts, though their ordering above you is uniformly distributed. It becomes even more interesting when CrossFit surprisingly announces that one workout will have two scores, resulting in four (not three) equally weighted scores, which happened this year.

However, for the vast majority of people who do CrossFit, it is *not* about competing. Lessons I've learned from CrossFit have surprisingly translated to lessons that have been helpful for my career. In my first few CrossFit classes, I was incredibly humbled by how good everyone else was and I could not imagine that I could ever in

my life be able to do those things (like walk on my hands). This is very much how I felt in graduate school, humbled by not just the intelligent professors, but my peers as well. But little by little, you learn, you practice, you put in the effort, you get advice and support from others, and you see results. At some point you find that other people look up to you the same way you looked up to others. The tricky part comes when you compare yourself to others (which is, of course, the definition of competing). If you define your selfworth based on your success, and your success is defined by comparing yourself and your achievements to others, you have a recipe for potential disaster. As the saying goes, comparison is the thief of joy-and how true that is. What I have learned is that almost nothing good comes from comparing yourself to others. I never feel better after comparing my CV to someone else, comparing my number of papers, grants, awards, to someone else. This is not what success is. It's about asking myself, have I done my best within the parameters of my life and what I value in my life? Could I publish more papers? Maybe, but not while trying to also spend time with my family and friends. Could I get more grants? Maybe (probably not), but it's not about getting a grant and putting it on your CV, it's about what a grant allows you to do-work on something you are passionate about, support students, train researchers, contribute in a meaningful way to a field. As non-flashy as it sounds, CrossFit has taught me that you can be excellent by being medium-good at several different things, and that, unlike the Open, my self-worth is not determined by the achievements of others.



#### Statistical Science launches "Short Communications"

The IMS journal *Statistical Science* is launching a new venture called "Short Communications." These will have an upper bound of 10 pages with references and could comprise philosophical musings on current research areas; alternative proofs and interpretations of important existing statistical results; suggestions for new methodology; short new proofs of new results or simulation experiments that point out downsides of a widely used procedure that have hitherto gone unnoticed. Short communications should not be used as an introduction for a long arXiv paper or supplement. Note that the platform is not intended to incorporate isolated short technical results. On the other hand, an interesting interpretation of an important existing result that is consequential or a theorem that builds on existing results in a broad area and provides key insights is admissible.

See https://imstat.org/journals-and-publications/statistical-science/ for more information. The editor is Moulinath Banerjee.

## **Rousseeuw Prize: Call for nominations**

On behalf of the organizers of the biennial million-dollar Rousseeuw Prize for Statistics, which was first awarded in 2022, Mia Hubert and Stefan Van Aelst write: Statistics is a cornerstone of science, health, industry, economics, government and more, and benefits society as a whole. The Rousseeuw Prize for Statistics awards pioneering work in statistical methodology. The prize recognizes a statistical innovation, that is, an outstanding contribution or tool that has had significant impact and found wide application in statistical practice, with relevance to society.

The biennial Rousseeuw Prize for Statistics is awarded by the King Baudouin Foundation (https://www.kbs-frb.be/en/ about-us), a large public utility foundation in Belgium. The prize is named after its sponsor, the statistician Peter J. Rousseeuw. The prize focuses on the innovation rather than on a single individual. This allows recognition of several individuals who made significant contributions to it. One of the goals of awarding the people who created such an innovation is to promote awareness of the important role and intellectual content of statistics and its profound impact on human endeavors.

The prize is awarded in even years and started in 2022. The award amount is one million US dollars per prize, to be split between awardees if there are several, which it is hoped will typically be the case. The award ceremony is scheduled in the fall of 2024 at the University of Leuven, Belgium.

For the purpose of the prize, statistics is defined as "the science and technology of obtaining useful information from data, taking its variability into account". Statistical work in the above sense can be found under a variety of flags, such as astrostatistics, big data, biometrics, chemometrics, classification, data analysis,

data collection, data mining, data science, data visualization, design of experiments, econometrics, environmetrics, genomic statistics, machine learning, multivariate analysis, pattern recognition, psychometrics, quality assurance, quantitative finance, regression, sociometrics, statistical computing, statistical learning, technometrics, time series analysis, etc. There is no time window for the work, in the sense that it would have to be done in the last *x* years. Likewise, there is no age limit on awardees. The awardees must be living persons, not organizations. If one of the main contributors is no longer alive, the surviving author(s) of the joint work can still be awarded. The deceased contributor(s) will of course be named explicitly. Nominations will propose a particular innovation as well as a list of awardees. When making this list it is encouraged to consider gender diversity when applicable. Self-nomination is not permitted. The nominations, including letters of recommendation, are to be submitted by February 29, 2024, on the website https://www.rousseeuwprize.org which contains all information about the prize and nomination procedure.

The King Baudouin Foundation appoints an international jury consisting of ten reputed statisticians. The jury will make a ranked shortlist of three options, in case some awardees do not accept the prize or are unwilling to be present at the award ceremony. To avoid undue pressure on the jury, its members are anonymous while they do their work. The selection of the award is aimed to be impartial and balanced. The members of the jury may not be related to the people on the shortlist by family ties, past or present life partner, PhD advisor/ student, or being a co-author in the last 15 years. When selecting the award topic and awardees, the jury takes into account important contributions and contributors

irrespective of gender, race, sexual orientation, ideology, or religion.

In October 2022, the inaugural prize went to a topic in biostatistics: Causal inference with applications in Medicine and Public Health. The laureates were James Robins, Miguel Hernan, Andrea Rotnitzky, Thomas Richardson and Eric Tchetgen Tchetgen. They carried out this research mainly in the United States.

In 2024 the prize can be awarded in any of the other four subfields of statistics:

- general statistical methodology (*estimation, inference, model selection, multivariate statistics, nonparametric methods, prediction...*),
- (2) computational statistics and data science (algorithms, big data, classification, clustering, data analysis, data mining, data science, data visualization, image analysis, high-dimensional data, machine learning, statistical computing, statistical learning, statistical languages and software, statistical methods of pattern recognition...),
- (3) statistics in the physical sciences and industry (astrostatistics, calibration, chemometrics, design of experiments, environmetrics, forensic statistics, geostatistics, quality assurance, reliability, spatial statistics, statistics in agriculture, statistical process control...), and
- (4) statistics in economics and humanities (business statistics, data collection, demography, econometrics, financial statistics, forecasting, official statistics, panel data, psychometrics, sociometrics...).

To ensure geographic diversity over time, the 2024 prize cannot go to work carried out in the United States, Australia, Canada, Ireland, New Zealand, or the United Kingdom. Also, to avoid any appearance of a conflict of interest the award cannot be in Peter Rousseeuw's research areas.

More information at https://www. rousseeuwprize.org/nominations.

## Hand Writing John Tukey: the first data scientist?

Contributing Editor David Hand has been re-reading John Tukey's "The Future of Data Analysis": Most readers will be familiar with the name John Tukey. He is renowned for developing the Fast Fourier Transform and the box plot, and for coining the term "bit" as used in computer science as well as the term "exploratory data analysis." Several statistical tools and methods are named after him. Over sixty years ago, in 1962 in the *Annals of Mathematical Statistics*, he published a 67-page paper on "The Future of Data Analysis." Some context is indicated by the fact that S-plus, Python, and R were developed much later, in the 1980s and 1990s.

Tukey began the paper by saying "For a long time I have thought I was a statistician, interested in inferences from the particular to the general ... I have come to feel that my central interest is in *data analysis*, which I take to include, among other things: procedures for analyzing data, techniques for interpreting the results of such procedures, ways of planning the gathering of data to make its analysis easier, more precise or more accurate, and all the machinery and results of (mathematical) statistics which apply to analyzing data."

The paper is a *tour de force*. Amongst the special growth areas he identifies are (using his terms, which the modern reader will readily be able to translate): spotty data, multiple-response data, problems of selection, ways of assessing error, data heterogeneous in precision, incomplete data, and others. He stresses the need for *iteration* in data analysis, something which is fundamental as one tries to understand data or fit a predictive model to it.

To initiate new forms of analysis he draws attention to the need to seek wholly new questions (he mentions "more complexly organised data," and complex data has been a recurring theme in modern statistics and data science), tackling old problems in more realistic frameworks (e.g. nonparametric methods), finding novel ways to summarise data (look at the data this way and that way; don't just follow the "standard" approach), and finding and evading deeper constraints (the notion that different experts, with different ways of looking at things, could lead to different insights). Regarding the last point, he stresses the danger in supposing that "all statisticians should treat a given set of data in the same way ... "-and I really like his description of the danger: "...all British admirals, in the days of sail, maneuvered in accord with the same principles. The admirals could not communicate with one another, and a single basic doctrine was essential to coordinated and effective action. Today, statisticians can communicate with one another, and have more to gain by using special knowledge (subject-matter or methodological) and flexibility of attack than they have to lose by not all behaving alike."

He remarks that, for a discipline to be a science, three constituents will be judged essential: intellectual content, organization into an understandable form, and reliance upon the test of experience as the ultimate standard of validity. And then he goes on to say that, as he sees it, data analysis passes all three tests, and so he would regard it as a science ("one defined by a ubiquitous problem rather than by a concrete subject").

The paper includes the famous remark: "Far better an approximate answer to the *right* question, which is often vague, than an *exact* answer to the wrong question, which can always be made precise." He continues by observing that, "Data analysis must progress by approximate answers, at best, since its knowledge of what the problem really is will at best be approximate."

An interesting aspect he considers is at what stage a proposed new method should be put into practice. How much do we need to know about it first? I suspect that, increasingly in the modern world, the question is moot, since new tools tend to be used immediately, in the hope that the gain outweighs the risk. He also discusses the dangers of seeking "the best" solution to a problem.

I was especially struck by his comment that, "Some would say that one should not automate such procedures of examination, that one should encourage the study of the data. (Which is somehow discouraged by automation?)"—to which he gives three counter-arguments: that most analysis will be done by non-experts in data analysis, known procedures must be easy and quick so that experts can explore the use of new methods, and that automating procedures requires them to have been fully specified. He says he finds these counter-arguments conclusive.

He gives a nuanced answer in the section on the impact of the computer, pointing out, obviously correctly, that "In many instances the answer may surprise many by being 'important but not vital' although in others there is no doubt but [that] the computer has been 'vital'." He did not foresee how dramatically computer power would advance over the succeeding half-century, and how many areas of data analysis would be strikingly transformed by the power we now have.

Naturally, some areas have advanced a long way in the past 60 years. One area, because of its need for computational power, is multivariate analysis, although he does discuss factor analysis and the seminal discipline of cluster analysis, such as it was at the time. Other particular topics he examines include stochastic process data, selection and screening, multiple sources of error, plots, teaching data analysis, the role of judgment in data analysis, and many other topics central to modern data science. It is, as I say, a *tour de force*, and one which fully justifies regarding him as the first data scientist.

## Written by Witten FOOSH!

## A cautionary tale from our contributing editor, Daniela Witten:

During my first few years as faculty, I traveled far and wide to give invited talks at department seminars and conferences. At the beginning, the travel was fun, and helpful for my career as I built out my professional network. But as time passed, the marginal career benefit of each additional trip decreased: what I needed was not a bigger network, but more time in my office to think and meet with my PhD students and write papers. And more importantly, the trips stopped feeling fun: I was tired, and wanted to spend my time living my personal life in Seattle. It became a vicious cycle: because I wasn't enjoying the travel, I wasn't making the most of it professionally, which made me enjoy it even less.

To break out of this cycle, I learned to say "no" to the majority of invitations. I am now very selective about my work travel, and try to keep it to just a handful of trips per year, so that I can enjoy and benefit from the trips that I do take.

But every year, when I put together my work travel schedule, I budget time for JSM. Now I'm going to let you in on a little secret: JSM is not about the talks, especially post-pandemic, when there are countless opportunities to attend talks by many of those exact same speakers virtually via Zoom. Yes, of course you should attend the talks when you're at JSM! But the real value-add of JSM is social. I go to JSM to meet up with grad school friends, distant collaborators, PhD alumni, the person with whom I have nothing in common researchwise but with whom I really hit it off at a conference in 2012, etc. And when I go to JSM, I go hard: I jam-pack my schedule with back-to-back social commitments from morning to night. Simply put: I act as though "socializing with statisticians" is

a competitive sport, and JSM is the world championships.

But I really have no business being at the world championships: I have not trained for them. I spend 361 days per year only minimally socializing with statisticians outside of my immediate sphere, I'm an introvert, and I require at least seven hours of sleep per night to function as a human (and nine+ for optimal performance). And so every year, I start Day 1 of JSM with boundless enthusiasm; by Day 2 I'm in an over-caffeinated state of near-exhaustion; by Day 3 I can no longer remember how to answer normal human questions like "how are you doing", "what have you been working on these days", and "have you had lunch"; and by Day 4 I have a searing headache and am just three minutes of small talk away from becoming a menace to society. By the time I fly back to Seattle on the morning of Day 5, I swear that I will never again socialize with another statistician. And the cycle repeats.

So this year, after a lot of introspection, I decided to approach JSM differently, and to go a little less hard. By this I mean: I'd honor my inner introvert, and spend my mornings on "me" time, while spending afternoons and evenings fully participating in all that JSM has to offer. As part of that "me" time, I got enough sleep, and went for runs (alone!!!) in the beautiful city of Toronto, both through its parks and along its spectacular waterfront.

And so this year, on the morning of Day 2 of JSM I was bright-eyed and wellrested; on Day 3 I was fully able to answer basic questions that arise as part of normal human conversations; and on Day 4 I was blissfully headache-free, jogging past Sugar Beach while congratulating myself on the quality of my life choices, when suddenly — FOOSH!

For the uninitiated, FOOSH is the acronym used by medical professionals to describe a "fall on outstretched hand." In this case, my FOOSH was caused by the retractable leash connecting the woman sitting on the bench to my left and her little yippie dog to my right. At eight inches off the ground, the leash made a perfect trip wire, and I didn't even know it was there until I hit the concrete with my arms splayed out in front of me. After a moment spent taking mental inventory of each of my body parts in a preliminary assessment of damage, I picked myself up, gathered what little remained of my dignity in the midst of a crowd of concerned bystanders, and completed my run.

By the time I arrived back at my hotel room-my right arm jutting away from my body at an unnatural angle-I knew that my arm was broken. But, I had places to be and things to do: after all, my "me" time was over, and Day 4 of the JSM Olympics was about to begin! And so, I took a quick shower (hard to do with one arm completely immobilized), got dressed (even harder), and continued my day. I went straight from my hotel room to a luncheon that I was hosting, and then onto three separate meetings with collaborators, and then to the COPSS awards session to watch my grad school officemate win the Presidents' Award (which you can read about at https://imstat.org/2023/08/31/ copss-presidents-award-ryan-tibshirani/). It's not that I didn't know my arm was broken-I absolutely did. But, I had a schedule for JSM, and you can't win at JSM by getting off schedule. At 6pm, I finally admitted defeat and hopped in an Uber to the emergency room, where I was diagnosed by X-ray with a radial head fracture (the canonical FOOSH injury), given a whole bunch of painkillers and a sling made out

of cheesecloth (literal cheesecloth!), and sent on my way. I made it back to JSM just in time to finish celebrating Ryan's accomplishments (see the photo).

When I got back to Seattle, I was telling a friend this story, and he asked me why I didn't go to the ER earlier. I justified, "Well, I had a schedule! I had to host a lunch, and then I had to go to three meetings, and then I had to watch Ryan get his award, and—" My friend cut me off and asked me why I hadn't thought that a broken arm might deserve priority over those plans. Honestly, I could not answer, because it had not even occurred to me. But now that my friend had said it out loud, it seemed absurd that I hadn't thought of it. Yes, I had a list of tasks that I wanted to accomplish on Day 4 of JSM, but I was in enough pain that I really wasn't effective at those tasks anyway-I certainly did not

have meaningful research conversations three hours after breaking my arm! And yes, I wanted to win at the Statisticians' Social Olympics—except that's not a real thing, it's 100% imaginary and I actually made it up, and I'm definitely not winning any sort of Olympics with a broken arm.

Well, it's never too early to plan for JSM 2024 in Portland. I have already decided that I'll continue my new tradition of spending my mornings on "me" time, and my afternoons and evenings participating in JSM. But, unlike at JSM 2023, I won't participate *too* fully. It's like the lesson I learned about work travel all those years ago: a little bit of fun is fun, but too much fun is not. I'll put together a schedule, but it will include an opt-out clause for medical emergencies, natural disasters, and "just not feeling like it." I probably won't win, but I'm pretty sure it will be my best JSM yet.



2023 COPSS Presidents' Award Recipient Ryan Tibshirani, Daniela Witten, and Cheesecloth. Daniela notes, "My arm is drooping out of the cheesecloth because it's very hard to adjust a sling with only one working arm, and also, did I mention that the sling was made out of cheesecloth?"

#### **STATA** [18]

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## **OBITUARY: C.R. Rao**

1920-2023

C. R. Rao, a giant in statistical theory who blazed the field over an 80-year research career died on August 22, 2023, two weeks short of his 103rd birthday. Calyampudi Radhakrishna Rao was born in Karnataka, India, on September 10, 1920. Rao was known to be a very good student in mathematics among his juniors and classmates since his high school days in India (Efron B. et al, 2020, "C.R. Rao's century," Significance). His twelfth research article published in 1945 from India when Rao was just 25 years old broke the ground in the field of statistical sciences (Rao, C.R., Bull Calcutta Math Soc, 1945). That article created several newer theories such as the Rao-Blackwell Theorem, Cramér-Rao inequality, and Rao distances, and made statistics a more formidable force in science. Prior to this 1945 article, Rao published articles in the field of number theory independently and also by collaborating with S. Chowla and R.C. Bose-for example, Rao. C.R., 1942; Rao, C.R., 1944; Bose, R.C., Chowla, S., Rao, C.R. 1945a,1945b. He served as president of the IMS, the International Biometrics Society and ISI, Netherlands. His passion for Statistics and applications continued till the end. Refer to IMS Bulletin's special tribute, C.R. Rao at 100, for his education background and list of key honors and awards.

The IEEE, honoring Rao as an honorary life member in 2022, and the International Prize in Statistics 2023 citation mentioned how Rao's path-breaking 1945 article shaped the field of statistics. The director of the Indian Statistical Institute recently wrote that C.R. Rao "will continue to be remembered as an influential figure who enriched the discipline of Statistics and who helped shape the Indian Statistical Institute. For that, we remain grateful to the entire [C.R.] Rao family."

By 1960, when C.R. Rao was 40, he was already an established name in the world of statistics. The Cramér-Rao Theorem and Rao–Blackwellization had essentially become parts of most standard mathematical statistics textbooks and courses. Numerous highly prestigious awards and recognitions subsequently came his way during the 1960s, including the Indian government's Padma Shri, Padma Bhushan, S.S. Bhatnagar Award for Science and Technology, Fellow of the Royal Society and a DSc from Cambridge University. But the best of Rao was yet to be seen. In fact, 1960–1980 was the prime period of Rao. This is the time when under his leadership as head of research and training, the Indian Statistical Institute became an institute of national importance and began to award degrees. Many of Rao's PhD students from that period have subsequently established themselves as leading statisticians, probabilists and mathematicians. This was the era when Rao played an instrumental role in shaping the theories and introducing the methodologies for multivariate analyses, linear models, discriminant analysis, variance component estimation, selection and screening problems, experimental designs, matrix theory with special emphasis on generalized inverses, asymptotic theory and characterization of probability distributions.

What could not escape the notice of any mathematical statistician of that period was the publication of his book *Linear Statistical Inference and Its Applications*, about which Bradley Efron, who was then a graduate student, says, "When the book came out in 1965, it was a real eye-opener for me." In fact, this was perhaps the



Calyampudi Radhakrishna (C.R.) Rao

first unified account of the entire field of mathematical statistics along with a solid foundation where the latest results known up to that point had been incorporated. This major book essentially defined how statistics was taught all over world in the '70s and '80s. He published more than 14 textbooks and about 40 edited books in the Elsevier *Handbook of Statistics* series. Many of his textbooks were translated in several languages in the world.

M-estimation, introduced by P. J. Huber, is an important extension of likelihood techniques and robust statistics. C.R. Rao had become very interested and, together with the students under his guidance, had made significant contributions to this area. In a paper published in Statistica Sinica, they established the CLT (central limit theorem) under very general conditions when the discrepancy function is convex. Later, they extended their results to the case where the discrepancy function is a difference of two convex functions, which covers almost all currently known results of M-estimation in linear models (see Bai, Rao, Wu, 1997).

In multivariate analysis, many statistics can be written as a function of sample means. Edgeworth expansions of the testing statistics can be used to calculate various error probabilities of multivariate tests and hence it is important here. A significant result on it was obtained by Bhattacharya and Ghosh (1978). Rao worked with his coauthor and established the Edgeworth expansion under the so-called "partial Cramér condition" (terminology coined by C.R. Rao), that is, the absolute value of the conditional Fourier transformation of one component given all other components has an upper limit less than one when the transformation variable tends to infinity.

It is well known that the CT scanner is an important medical diagnostic instrument. Based on projections in all directions, the inner structures of the human body can be precisely imaged. However, it does not work with moving parts, such as the left ventricle of the heart. As it can only take two orthogonal pictures at one time, the reconstruction can only rely on these two pictures. The cardiologist P.S. Reddy (Pittsburgh Medical School), jointly with C.R. Rao, P. Krishnaiah and others in the Center for Multivariate Analysis, applied a huge grant from Siemens to solve this problem. More details on this can be found in a tribute to C.R. Rao (Andrews et al, Notices of the AMS, 2022, https://www.ams. org/notices/202206/rnoti-p982.pdf).

Since Akaike proposed the AIC for model selection criterion in 1973, various information criteria were proposed in the literature. The most famous ones are AIC and BIC. It is easy to show that AIC is usually overestimating the true model, more precisely, it is not consistent in the sense that there is a positive probability that the true model is over estimated when the number of unknown parameters is bounded. In contrast, the BIC is frequently underestimated the true model. Due to this, C.R. Rao and collaborators proposed a GIC (general information criterion). See Rao, Wu, 1989; Review paper by Rao, Wu, 2001, Handbook of Statistics. Although GIC is more flexible, the penalty parameter

needs to be decided. To this end, C.R. Rao, Bai and Wu (Rao's PhD student) proposed the data-driven information criterion in Bai, Rao, Wu, 1999. C.R. Rao also spent substantial time during the 1980s in density estimation for directional data.

The intent of C.R. Rao's book *Statistics* and *Truth: Putting Chance to Work* (2nd edn., 1997) was to explain the essence of statistics with real examples, for a broad readership. He introduced the following logical equation that attracted the scientific community:

Uncertain knowledge + Knowledge of the extent of uncertainty in it

= Usable knowledge.

This is a new way of thinking, and this logical equation is exceptionally useful for both understanding and explaining statistics.

Further, in the book, C. R. Rao express the main principle of data analysis in the form of a fundamental equation:

Data analysis = Answering specific questions + Providing information for new lines of research.

Rao distances and information geometry principles due to C.R. Rao were now extended to complex plane manifolds, for example Rao (Arni), 2022; Rao (Arni) and Steven, 2020: Steven and Rao (Arni), 2022; etc. These complex manifolds were shown to have implications in virtual tourism and universe climate analysis.

What is C.R. Rao's legacy? Is it the simplicity of Cramér–Rao inequality? Is it the enigmatic Rao–Blackwellization? Is it the complexity of information in the data? Is it the industriousness of orthogonal arrays? Is it the ubiquity of the score statistic? Is it the fashionable characterizations? Is it the discerning discriminant analysis? Is it the enveloping book, *Linear Statistical Inference*? Is it the mettle-testing book, *Advanced Statistical Methods in Biometric Research*? We give up. C.R. Rao might have left this world. He will remain with us forever.

C.R. Rao, who despite being renowned as one of the world's foremost mathematicians and statisticians, believed that the real value of numbers lay not in their ability to predict, but in their capacity to inspire and illuminate. Through the precision of digits and the elegance of probability, C.R. Rao taught us to seek truth in its purest form, to cut through the noise and find the signal that guides our understanding of the world. Rao, the genius, was not confined to equations. Behind the intense gaze that focused on complex algorithms was a heart that pulsed with a passion for humanity. C.R. knew how to bring out the best in others. To him, every individual was like a unique data point, possessing potential waiting to be unlocked. With unvielding patience and an open heart, C.R. Rao mentored, guided, and inspired countless individuals, ensuring that their potential was not only recognized but also realized. In a world often caught up in tempests of distraction, C.R. was able to see and share beauty. Whether it was the graceful arc of tennis volley, the subtle expression of a dancer, the giggle of child, or the delicate bloom of a flower, C.R. Rao celebrated the aesthetic marvels of our universe. As we bid farewell to this luminary, we are reminded not just of the legacy he leaves in awards, degrees, articles, textbooks, and lectures, but also, and more importantly, in the life lessons shared. Rao's life serves as a testament to the belief that in seeking truth, sharing beauty, and uplifting others, we find the true essence of existence. The numbers have lost their greatest champion, but the world has gained from his immeasurable wisdom.

Written by Ravindra Khattree, Zhidong Bai, Paula Caligiuri, Yasunori Fijikoshi, Yuehua Wu, Arni S.R. Srinivasa Rao, and corresponding author Marepalli B. Rao.

## **Recent papers** Annals of Statistics: Vol. 51, No. 3, June 2023

The Annals of Statistics aims to publish research papers of the highest quality reflecting the many facets of contemporary statistics. Primary emphasis is placed on importance and originality. The Co-Editors are Enno Mammen and Lan Wang. Access papers at https:// projecteuclid.org/journals/annals-of-statistics/

Orthogonal statistical learning	DYLAN J. FOSTER AND VASILIS SYRGKANIS 879
$\label{eq:potential}  Dptimal high-dimensional and nonparametric distributed testing under communication constraints. \ .$	BOTOND SZABÓ, LASSE VUURSTEEN AND HARRY VAN ZANTEN 909
Optimal Permutation Estimation in CrowdSourcing problems.	EMMANUEL PILLIAT, ALEXANDRA CARPENTIER AND NICOLAS VERZELEN 935
Total positivity in multivariate extremes.	FRANK RÖTTGER, SEBASTIAN ENGELKE AND PIOTR ZWIERNIK 962
A power analysis for model-X knockoffs with $\ell_p$ -regularized statistics ASAF WEINSTEIN, V	VEIJIE J. SU, MAŁGORZATA BOGDAN, RINA FOYGEL BARBER AND EMMANUEL J. CANDÈS 1005
A general characterization of optimal tie-breaker designs	
Complexity analysis of Bayesian learning of high-dimensional DAG models and their equivalence classe	s
Optimal reach estimation and metric learning	EDDIE AAMARI, CLÉMENT BERENFELD AND CLÉMENT LEVRARD 1086
Universal rank inference via residual subsampling with application to large networks	XIAO HAN, QING YANG AND YINGYING FAN 1109
Pairwise interaction function estimation of stationary Gibbs point processes using basis expansion. $\ . \ .$	ISMAÏLA BA, JEAN-FRANÇOIS COEURJOLLY AND FRANCISCO CUEVAS-PACHECO 1134
Efficiency of estimators for locally asymptotically normal quantum statistical models	
Inference in Ising models on dense regular graphs	
AutoRegressive approximations to nonstationary time series with inference and applications $\ldots \ldots$	
Optimal discriminant analysis in high-dimensional latent factor models	XIN BING AND MARTEN WEGKAMP 1232
Dispersal density estimation across scales	MARC HOFFMANN AND MATHIAS TRABS 1258
$\label{eq:main_state} Minimax \ rate \ of \ distribution \ estimation \ on \ unknown \ submanifolds \ under \ adversarial \ losses \ \ldots \ \ldots$	
Inference for low-rank models	VICTOR CHERNOZHUKOV, CHRISTIAN HANSEN, YUAN LIAO AND YINCHU ZHU 1309
Extreme value inference for heterogeneous power law data.	
Finite-sample complexity of sequential Monte Carlo estimators	
Coverage of credible intervals in Bayesian multivariate isotonic regression	
Universal regression with adversarial responses	
Asymptotic normality for eigenvalue statistics of a general sample covariance matrix when $p/n \rightarrow \infty$ and	d applications JIAXIN QIU, ZENG LI AND JIANFENG YAO 1427

## Annals of Applied Statistics: Vol. 17, No. 3, September 2023

interaction models . . . . . . DANILO A. SARTI, ESTEVÃO B. PRADO, ALAN N. INGLIS, ANTÔNIA A. L. DOS SANTOS, CATHERINE B. HURLEY, RAFAEL A. MORAL AND ANDREW C. PARNELL 1936 The scalable birth—death MCMC algorithm for mixed graphical model learning

## **Recent papers** continued

Annals of Applied Statistics: Vol. 17, No. 3, September 2023

A Bayesian hierarchical model framework to quantify uncertainty of tropical cyclone precipitation forecasts STEPHEN WALSH, MARCO A. R. FERREIRA, DAVID HIGDON AND STEPHANIE ZICK 1984
Joint point and variance estimation under a hierarchical Bayesian model for survey count data TERRANCE D. SAVITSKY, JULIE GERSHUNSKAYA AND MARK CRANKSHAW 2002
Data-adaptive discriminative feature localization with statistically guaranteed interpretation
Dynamic prediction of residual life with longitudinal covariates using long short-term memory networks
Postelection analysis of presidential election/poll data
Log-Gaussian Cox process modeling of large spatial lightning data
using spectral and Laplace approximations.
Graph-aware modeling of brain connectivity networks
Bayesian model selection: Application to the adjustment of fundamental physical constants.
Leveraging population outcomes to improve the generalization of experimental results:
Application to the JTPA study
Estimating causal effects of HIV prevention interventions with interference in network-based studies among people
who inject drugs TINGFANG LEE, ASHLEY L. BUCHANAN, NATALLIA V. KATENKA, LAURA FORASTIERE, M. ELIZABETH HALLORAN, SAMUEL R. FRIEDMAN AND GEORGIOS NIKOLOPOULOS 2165
Using persistent homology topological features to characterize medical images: Case studies on lung and brain cancers
Bayesian combinatorial MultiStudy factor analysis
Using proxies to improve forecast evaluation
Bayesian nonparametric mixture modeling for temporal dynamics of gender stereotypes
The Bayesian nested lasso for mixed frequency regression models.
Spatial quantile autoregression for season within year daily maximum temperature data JORGE CASTILLO-MATEO, JESÚS ASÍN, ANA C. CEBRIÁN, ALAN E. GELFAND AND JESÚS ABAURREA 2305
A dynamic screening algorithm for hierarchical binary marketing data
Penalized estimating equations for generalized linear models with multiple imputation
Subbotin graphical models for extreme value dependencies with applications to functional neuronal connectivity
Doubly-online changepoint detection for monitoring health status during sports activities.
Signal-noise ratio of genetic associations and statistical power of SNP-set tests
Evaluating the use of generalized dynamic weighted ordinary least squares
for individualized HIV treatment strategies
Imputation scores
An efficient doubly-robust imputation framework for longitudinal dropout, with an application to an Alzheimer's clinical trial
A Bayesian growth mixture model for complex survey data:
Clustering postdisaster PTSD trajectories
Estimating HIV epidemics for subnational areas
Joint modeling of playing time and purchase propensity in massively multiplayer online role-playing games
using crossed random effects
Structure learning for zero-inflated counts with an application to single-cell RNA sequencing data THI KIM HUE NGUYEN, KOEN VAN DEN BERGE, MONICA CHIOGNA AND DAVIDE RISSO 2555
Bayesian inference and dynamic prediction for multivariate longitudinal and survival data
Estimating GARCH(1, 1) in the presence of missing data.
SNIP: An adaptation of sorted neighborhood methods for deduplicating pedigree data
A horseshoe mixture model for Bayesian screening with an application to light sheet fluorescence microscopy
in brain imaging
Using predictability to improve matching of urban locations in Philadelphia.
A semiparametric promotion time cure model with support vector machine
Corrigendum
Modeling biomarker ratios with gamma distributed components

## **Student Puzzle Corner 47**

We have two problems again—but this time the statistics problem and the probability problem are both based on the same story, and both are somewhat non-standard versions of the birthday problem. Send us your answers for either or both.

Deadline: November 7, 2023 Puzzle 47.1a A six-sided fair die is repeatedly rolled until each of the six faces appears twice. Let W be the number of rolls needed to stop the experiment. Find E(W) explicitly. Puzzle 47.1b Next, suppose that the die is repeatedly rolled until one of the six faces appears three times. Let Z be the number of rolls needed to stop the experiment. Find E(Z) explicitly.

Puzzle 47.2. Provide a test of the hypothesis that a six-sided die is fair by using W, or Z, or both, and indicate exactly when you will reject the hypothesis of fairness

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.

#### Solution to Puzzle 46

Congratulations to Bilol Banerjee (ISI Kolkata) and Bishakh Bhattacharya (ISI Kolkata), both pictured right, whose answers to 46.1 and 46.2 respectively were correct, and to Michael Nelson Howes (Stanford University), who is commended for substantial effort. Anirban DasGupta explains:

**Puzzle 46.1** (see right) In the statistics problem, each density f(z) is easily seen to possess a second moment. It follows that the covariance matrix of the least squares estimate is proportional to  $(X'X)^{-1}$ . Furthermore, because each density f(z) is an even function of z, the least squares estimate is unbiased. Therefore, if  $\frac{1}{n}(X'X)$ converges in the usual sense to a positive definite matrix M, then the least squares estimate is consistent in  $\mathcal{L}_2$ , and so consistent. Now consider any estimate of the general form LSE + A sequence going to zero in probability (this could even be a deterministic sequence going to zero), then it will be consistent.

ilol Raneriee



Bishakh Bhattacharva

Puzzle 46.2 The only nonempty graphs on three vertices are those that connect two of three vertices, or connect one vertex to two others, or connect all pairs. It follows that  $f(\lambda) = \lambda^2 (\lambda^4 + 12\lambda^2 + 24) Exp[-3\lambda]/8$ . The maximum is attained at  $\lambda = 0.868844$  and the maximum value is 0.234153.

## Clara-fications

For problems of a different sort. Earlycareer researchers are invited to send their guestions about the life of a researcher or ask for career advice, and Clara Grazian will find an answer. We'll publish these in the next available issue [anonymized to avoid embarrassment!]. Send your questions to bulletin@imstat.org.



#### Puzzle 46.1.

Consider the usual linear model  $Y_i = \beta_0 + \beta_1 x_{i1} + ...$  $+ \beta_p x_{i,p} + \epsilon_i, i = 1, 2, ..., n,$  $1 \le p < \infty$ . We assume that  $\epsilon_i \stackrel{\text{iid}}{\sim} f(z)$ , where f(z) = $c(\alpha) e^{-|z|^{\alpha}}, -\infty < z < \infty, 0$  $< \alpha < \infty$ , and  $c(\alpha)$  is the normalizing constant. Provide infinitely many explicit consistent estimators of the vector of regression coefficients, estimators that are consistent under all error densities f stated above.

#### **Puzzle 46.2.**

Suppose X, Y, Z are i.i.d. Poisson with mean  $\lambda > 0$ . Let  $f(\lambda) = P_{\lambda}(X, Y, Z \text{ are the})$ degrees of a nonempty graph on 3 vertices). Find  $\sup_{\lambda > 0} f(\lambda)$ .

## An Invitation to Research: Systems Biology

In the September 2022 *Bulletin* issue, we introduced a new "Invitation to Research" section, kicked off by Alexander Y. Mitrophanov, Senior Statistician at the Frederick National Laboratory for Cancer Research, National Institutes of Health, USA. Alex invited members to collaborate on Quantitative Perturbation Theory for Stochastic Processes, which since created "very meaningful" follow-up. Alex now writes another Invitation to Research:

#### Statistics, Stochastics, and Data Science for Systems Biology

It has been quite a while since systems biology stopped being a buzzword and became an established research field (as illustrated, e.g., by the fact of existence of a Systems Biology Department at Harvard). While systems biology is a "mindset rather than a tool set" (paraphrasing one of the field's leaders, Yoram Vodovotz), its success depends on the tools it uses. And the needed mathematical and statistical tools may not always be immediately available. This article reflects my personal perspective based on years of experience working in that broad field.

In systems biology, there are two main methodological approaches: bottom-up and top-down. Due to my familiarity with the former, I will mainly focus on it here. "Bottom-up" means that we start with a (known or assumed) molecular or cellular mechanism underlying some biological system, build a mathematical model, fit it to the available experimental data, and then attempt to make predictions or draw conclusions about the behavior of the system as a whole. The computational predictions can, and should, be then tested experimentally, and the cycle of model improvement, prediction, and testing can continue as needed. In "classic" systems biology, the mathematical model often is

a system of nonlinear ordinary differential equations (ODEs), so fitting it to the data is an exercise in nonlinear regression (more precisely, in inference for dynamical systems). And here, right away, we run into questions. For example, how many data points per one model parameter do we need to have? Will the rule of thumb of 10 data points per parameter apply here? Recently, a remarkable work challenged this rule of thumb for logistic regression [1], illustrating the depth of this question. This is related to the general question of sample size and power analysis for nonlinear models, and rigorous answers to it are actively researched. Now, if we obtained some estimates for our nonlinear model's parameters, what is the best way to compute confidence and prediction intervals for the model's outputs? Bootstrapping is often an option, but how can we derive accurate enough, and general enough, analytic approximations to reduce the computational burden? It should be noted that, in systems biology, model fitting is not always straightforward sum-ofsquares minimization, but sometimes can be "fitting with a twist," where the "twist" depends on the problem being solved. For example, in one study, we needed to keep adjusting the ODE system's initial conditions during fitting to make sure that the initial conditions always correspond to the system's steady state [2]. In another study, the initial condition was not an issue, but the possibility of overfitting was, so we implemented a neural-network-style stopping criterion in our ODE-model fitting algorithm [3]. It would be good to know how the properties of the resulting fits (such as consistency) depend on the "twist" being used. If we go beyond ODEs and enter the world of partial differential equations, all these problems only become harder.

A major extension of the ODE-based approach is stochastic modeling, where we

use a random process to simulate system kinetics. (The ODE here can be regarded as an approximation when the number of system components-molecules or cells-is very large.) Often, stochastic models in systems biology are inspired by the chemical master equation formalism and thus constitute a continuous-time Markov chain. On the theory side, this area provides rich opportunities for studying different kinds of approximations and limits. Notably, such results may also apply outside systems biology (e.g., in population dynamics). On the more practical side, current research focuses on algorithms and computational strategies to simulate stochastic biomolecular systems in efficient ways, which becomes an issue for large systems (e.g., [4]). And, of course, there's the ever-present question: how do we fit stochastic models to experimental data, and what are the statistical properties of the resulting fits? Being an active area of research (e.g., [5]), this topic can benefit from new and improved solutions.

Finally, in top-down systems biology, we start with data sets and try to elucidate robust data patterns, understand the dependencies between variables, and even infer the structure of the underlying biological system. This is probably the most mature area of application of statistical methods in systems biology. Successes here have been numerous, but new challenges continue to emerge. Due to improvements in experimental methodology, biological data keep growing in both amount and complexity, and new research questions arise. This necessitates new developments not only on the side of analysis methodology, but also on the side of data storage, data security, data sharing, and computational resources. This is where what we call statistics meets what many call data science. One recent example is the problem of integration of multimodal biomedical data (e.g., data

Continues on page 20

from genomics studies, physiological measurements, medical imaging, and electronic patient records).

I firmly believe that statistical science and systems biology will continue to enrich and strengthen each other for years to come.

If you are interested in this area and would like to work together on these ideas, get in touch: alex.mitrophanov@nih.gov. If you have an Invitation to Research of your own, email bulletin@imstat.org.

#### References

- Sur P., Candès E. J. (2019) A modern maximum-likelihood theory for high-dimensional logistic regression. *Proc Natl Acad Sci* 116: 14516–14525.
- 2 Kato A., Mitrophanov A. Y., Groisman E. A. (2007) A connector

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- 4 Anderson D. F., Ehlert K. W. (2022) Conditional Monte Carlo for reaction networks. *SIAM J Sci Comput* 44: A993–A1019.
- 5 Vo H. D., Fox Z., Baetica A., Munsky B. (2019) Bayesian estimation for stochastic gene expression using multifidelity models. *J Phys Chem B* 123: 2217–2234.

In this **Invitation to Research** section, IMS members are invited to propose new research ideas or directions. These do



not need to be formally/provably absolutely new, but it's an opportunity to emphasize the benefit of an idea for the research community. The purpose is twofold: **to gauge the research community's interest** before investing more time and effort into these ideas; and **to find collaborators to tackle these new ideas**, if other people become interested and come up with related ideas. We encourage interested readers to respond to these ideas with critical comments and/or suggestions to the author of this Invitation (Alexander Y. Mitrophanov, Frederick National Laboratory for Cancer Research, National Institutes of Health, USA: alex.mitrophanov@nih.gov), and/or to write in and issue your own Invitation (to bulletin@imstat.org).

## Report New Researchers Conference 2023

Linbo Wang and Dehan Kong report: The 23rd Meeting of New Researchers in Statistics and Probability (NRC) convened at the University of Toronto Scarborough from August 2–5, 2023: see https://sites.google.com/site/linbowangpku/nrc-2023. The conference was attended by 69 emerging researchers and 13 senior speakers and panelists, hailing from the United States, Canada, China, the United Kingdom, Switzerland, Iran and Singapore.

The conference kicked off on Wednesday with a relaxed evening where attendees mingled and played board games. The scientific program on Thursday spotlighted two plenary talks by recent Tweedie Award recipients: Jonathan Niles-Weed addressed statistical and computational challenges in optimal transport, and Chao Gao provided insights on robust statistics. The day was further enriched by two-minute flash talks from poster presenters, followed by a poster session. We then had our first panel discussion on mentoring, led by Jianqing Fan and Michael Stein. Thursday evening treated attendees to a banquet, underscored by an enlightening speech from Peter Bühlmann.

Friday was filled with invited talks and panel discussions. Paul Fearnhead delved into the problem of testing for a change in mean after changepoint detection, and Jianqing Fan offered insights into ranking inferences based on multiway comparisons. These talks alternated with two panel discussions on funding and publishing. In the funding panel, NSF program officer Yulia Gel and NSERC evaluation group member Leilei Zeng shared their advice for early-career researchers, with Jianqing Fan and Nancy Reid offering their experience and some lessons. The publishing panel facilitated a dynamic dialogue with editors from top statistical journals. On Friday evening, participants enjoyed the gift of time, with many of them joining organized activities such as card games, table tennis and karaoke.

The final day of the conference began with a thought-provoking talk by Peter Bühlmann on causal-inspired and robust statistical machine learning. This was followed by a panel discussion on collaboration, where participants gleaned insights from the experiences and anecdotes shared by Yulia Gel, Xuming He, Dylan Small, and Michael Stein.

This year's meeting was co-sponsored by the National Science Foundation, the Institute of Mathematical Sciences, the University of Toronto Scarborough, the Canadian Statistical Sciences Institute, and its Ontario Regional Centre (CANSSI–Ontario), along with the University of Toronto Department of Statistical Sciences. Moreover, we benefited from the generous administrative support of the Department of Computer and Mathematical Sciences and the Conference, Meeting & Event Planning Center at the University of Toronto Scarborough.

[We'll bring you information about next year's NRC soon!]

## IMS meetings around the world

Joint Statistical Meetings

2024 Joint Statistical Meetings August 3-8, 2024 Portland, Oregon, USA w https://ww2.amstat.org/meetings/jsm/2024/

#### Submit a Continuing Education Course Proposal

Professional Development (PD) is a fundamental component of the professional life of statisticians, increasing the value of their contributions to society. As a priority among our members, the ASA will offer continuing education courses at JSM 2024 in Portland,

PORTLAND OREGON AUGUST 3-8, 2024

Oregon, and we encourage your contribution. Submit a continuing education course proposal that touches on one of these areas:

- An in-depth presentation of a specific area of statistical theory, methodology, or application. The material covered may focus on cutting-edge methods or other more established topics.
- A broad overview of an established area of statistical theory or methodology suitable either as a refresher or an introduction to the field.
- A description of a statistical method and its application using one or more software tools, as long as there is significant content material described in the proposal.

.....

Submit your proposal by September 30, via https://ww2.amstat.org/meetings/jsm/2024/submissions.cfm Other key dates are:

Computer Technology Workshop Proposal Submission: July 13, 2023 – January 15, 2024 Topic-Contributed Session Proposal Submission: November 15 – December 7, 2023 Contributed Abstract Submission: December 1, 2023 – February 1, 2024

Registration & Housing reservations open May 1, 2024.

JSM dates for 2025–2029 (no information yet for JSM2027)

IMS Annual Meeting	JSM 2026	IMS Annual Meeting	JSM 2028
@ JSM 2025	August 1–6, 2026	@ JSM 2027	August 5–10, 2028
August 2–7, 2025	Boston, MA, USA	<b>Dates and location</b>	Philadelphia, PA,
Nashville, TN, USA		to be confirmed	USA

#### IMS Asia Pacific Rim Meeting (IMS-APRM) 2024 NEW DATES: January 4–7, 2024. Melbourne, Australia

w https://ims-aprm2024.com/

IMS-APRM will provide an excellent forum for scientific communications and collaborations for researchers in Asia and the Pacific Rim, and promote communications and collaborations between the researchers in this area and those from other parts of the world. The program covers a wide range of topics in statistics and probability, presenting recent developments and the state of the art in a variety

of modern research topics and in applications.

The conference organizers are accepting contributed abstracts via the website (deadline for submission is October 31, 2023).

Registration is now open, with an early-bird rate until September 30: https://ims-aprm2024.com/registration/



At a glance:

forthcoming IMS Annual Meeting and JSM dates

### 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: TBC

JSM: Boston, MA, August 1-6, 2026



**IMS** Annual Meeting @ JSM: Location TBA, August [dates TBA], 2027



**IMS Annual Meeting** 

August 4-9, 2029

Seattle, WA, USA

UPDATED

@ JSM 2029

## **More IMS meetings**

#### IMS annual meeting 2024: Bernoulli–IMS 11th World Congress in Probability and Statistics

#### August 12-16, 2024

#### Ruhr-University Bochum, Germany

w https://www.bernoulli-ims-worldcongress2024.org/

The Institute of Mathematical Statistics Annual Meeting will be held at the 11th World Congress. Look out for a call for papers soon.

The plenary speakers have been announced. The Wald lectures will be given by **Peter Bühlmann**, ETH Zurich, and the Le Cam lecturer is **Peter Bickel**, University of California, Berkeley. Four IMS Medallion lectures will be given by **Moulinath Banerjee**, University of Michigan, Ann Arbor; **Marc Hallin**, Université Libre de Bruxelles; **Remco van der Hofstad**, TU Eindhoven; and **Chunming Zhang**, University of Wisconsin–Madison. There will be two IMS–BS Schramm lectures, from **Patricia Gonçalves**, Instituto Superior Técnico, Lisbon, and **Nina Holden**, Courant Institute, New York University. The IMS–BS Doob lecture will be given by **Pablo Ferrari**, University of Buenos Aires. The BS lectures are as follows: **Emmanuel Candès**, Stanford (Bernoulli lecture); **Victor Chernozhukov**, MIT (Cox lecture); **Rafal Latala**, University of Warsaw (Kolmogorov lecture); **Xihong Lin**, Harvard (Laplace lecture); **Mihaela van der Schaar**, Univ. Cambridge (Tukey lecture); and **Rongfeng Sun**, National University of Singapore (Lévy lecture).

2023 IMS International Conference on Statistics and Data Science (ICSDS2023) December 18–21, 2023 Lisbon, Portugal

w https://sites.google.com/view/icsds2023/

The IMS ICSDS 2023 (International Conference on Statistics and Data Science) will take place December 18–21, 2023 in Lisbon, Portugal. We have received a tremendous response, including many outstanding invited speakers from different countries and continents, covering a wide range of subjects in statistics and data science, in theory, methodology and applications. In particular, we are pleased to announce the **four confirmed plenary speakers**: David Donoho, Michael Jordan, Gábor Lugosi and Caroline Uhler. For more details, see https://sites.google.com/view/ icsds2023/plenary-speakers

To ensure inclusivity and accessibility of ICSDS to junior researchers all over the world, IMS is pleased to announce a **new travel support fund for junior faculty and post-docs who do not have other forms of institutional support**. This fund is generously sponsored by the Industry Friends of IMS (IFoIMS: https://imstat.org/ industry-friends-of-ims-ifoims/). Please see https://www. icsds2023.com/ for the link submit your application, no later than October 20.

Registration is open via the 2023 ICSDS site https:// sites.google.com/view/icsds2023/registration

We look forward to seeing you at the ICSDS in Lisbon in December.

Regina Liu and Annie Qu, Program Co-chairs, 2023 IMS ICSDS

#### International Symposium on Nonparametric Statistics (ISNPS 2024) June 25–29, 2024

#### Braga, Portugal

w https://w3.math.uminho.pt/ISNPS2024/

We are pleased to announce that the next International Symposium on Nonparametric Statistics will be held in Braga, Portugal, from June 25–29, 2024. The venue is Altice Forum Braga, a conference site which is situated 15 minutes walk from the city center of Braga.

Inspired by the success of the previous Nonparametric conferences in Chalkidiki (Greece, 2012), Cadiz (Spain, 2014), Avignon (France, 2016), Salerno (Italy, 2018) and Paphos (Cyprus, 2022), the conference will bring forth recent advances and trends in several areas of nonparametric statistics, in order to facilitate the exchange of research ideas, promote collaboration among researchers from all over the world, and contribute to the further development of the field. The program will include plenary talks, special invited talks, invited talks, contributed talks and a poster session on all areas of nonparametric statistics.

> AMOUNCE AMOUOUY meeting! Submit the details to imstat.org/ims-meeting-form/

#### Myles Hollander Distinguished Lecture by Adrian Raftery October 25, 2023 Florida State University and online

w https://stat.fsu.edu/HollanderLecture Adrian Raftery, the Boeing International Professor of Statistics and Sociology and an adjunct professor of Atmospheric Sciences at the University of Washington, is the 2023 Myles Hollander Distinguished Lecturer. Professor Raftery's will present his lecture on *"Downscaled* 

Probabilistic Climate Change

Projections, with Application

the campus of Florida State

The live talk will also be

For more information

and to register for the vir-

tual talk, visit stat.fsu.edu/

to Hot Days," on October

25, 2023 at 11:00am on

accessible via Zoom.

HollanderLecture.

University.



Adrian Raftery

#### 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.

## B ENAR

2024 ENAR/IMS Spring Meeting March 10–13, 2024 Baltimore, MD, USA w https://www.enar.org/meetings/ spring2024/

The 2024 ENAR/IMS Spring meeting has the theme *ENAR – A Home for Every Biostatistician*. Reneé H. Moore, ENAR 2024 President, says, "No matter whether you are a first-time attendee, a first-time attendee since the pandemic, or too-manytimes-to-count attendee, our goal is that you find something exciting and relevant in the scientific and educational programs."

The meeting takes place at the Baltimore Marriott Waterfront which is now accepting room reservations. See https://www.enar. org/meetings/spring2024/hotel.cfm

Submission deadlines. Between September 5 and October 6, 2023, Distinguished Student Paper Award submissions (up to 20 awards are made each year; see https://www.enar.org/ meetings/StudentPaperAwards/index.cfm for more information). Between September 5–October 17, 2023: contributed session proposals due.

#### WNAR2024

held in conjunction with the 2024 Graybill Conference June 9–12, 2024 Fort Collins, Colorado, USA w https://wnar.org/ wnar2024

The 2024 meeting of the Western North American Region of The International Biometric Society will be held joint with the 2024 Graybill Conference. There will be short courses, a Presidential Invited Address, invited and contributed sessions, young investigator events, and a Student Paper Award with oral sessions. The local organizer is Wen Rick Zhou, Colorado State University. Email wnar@wnar.org with any questions.

WNAR/IBS Outstanding Impact Award and Lectureship: Submit nominations for the 2024 award by November 1, 2023.

#### 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



The Institute of Mathematical Statistics presents

## IMS MONOGRAPHS

#### ims Monographs



NEW BOOK

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#### 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.

## 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).

#### 2024 Seminar on Stochastic Processes March 13–16, 2024 Houston, TX, USA

#### w https://ssp2024.rice.edu/

The Seminar on Stochastic Processes is a series of annual conferences devoted to stochastic analysis, Markov processes and other topics in probability theory of current interest. Every conference features five invited speakers and provides opportunity for short informal presentations of recent results and open problems.

Apart from informal presentations by conference participants, there will be plenary talks by Tom Hutchcroft, Etienne Pardoux, Sébastien Roch [IMS Medallion Lecture], Ludovic Tangpi, and Yilin Wang. The main conference will be held on March 14–16, 2024, on the campus of Rice University in Houston, TX, USA. On March 13, there will be a special set of tutorial lectures and discussions targeted at early-career researchers; the tutorial lecturer will be announced shortly.

We expect this conference will be supported with funds to allow reimbursement of travel expenses. Graduate students, early-career researchers, women, and members of underrepresented groups are especially encouraged to register and apply for funds. Applications will be accepted soon on the conference website. SSP 2024 will be held in person, though remote participation may be made available for mobility accommodation. Further information on funding, accommodations, and other details, including the registration form, will be available soon at https://ssp2024.rice.edu/

#### Fifth International Workshop on the Statistical Analyses of Multi-Outcome Data July 9–10, 2024. Salzburg, Austria

#### w https://sam-workshop.github.io/SAM 2024/

The fifth international workshop on Statistical Analyses of Multi-Outcome Data (SAM 2024), will take place in Salzburg, Austria, on July 9–10, 2024. Salzburg, renowned as Mozart's birthplace and the picturesque setting for the film *The Sound of Music*, is a spectacularly scenic city and an ideal destination for a summer visit. Our workshop covers a broad range of topics, such as complex longitudinal and survival data analysis, high-dimensional data analysis, precision medicine, and artificial intelligence/ machine learning methods, among others. The workshop will have two plenary sessions (speakers TBA), 24 invited sessions, and a poster session. A banquet will be held on July 9.



Scenic Salzburg hosts SAM 2024

## Other meetings and events around the world

#### **IMSI workshops**

The Institute for Mathematical and Statistical Innovation (IMSI) has the following workshops coming up: **October 9–13, 2023: Algebraic Statistics for Ecological and Biological Systems w** https://www.imsi.institute/activities/ algebraic-statistics-for-ecological-and-biological-systems/ **November 6–10, 2023: Algebraic Economics w** https://www. imsi.institute/activities/algebraic-economics/

December 11–15, 2023: Bayesian Statistics and Statistical Learning: New Directions in Algebraic Statistics w https:// www.imsi.institute/activities/bayesian-statistics-andstatistical-learning-new-directions-in-algebraic-statistics/ January 10–12, 2024: Teaching and Evaluating Data

**Communication At Scale w** https://www.imsi.institute/ activities/teaching-and-evaluating-data-communicationat-scale/

**February 5–9, 2024: Decision Making and Uncertainty w** https://www.imsi.institute/activities/decision-making-anduncertainty-2024

#### **IMSI programs**

UPDATED

IMSI at the University of Chicago is now accepting applications for these long programs:



Spring 2024 Long Program: Data-Driven Materials Informatics: Statistical Methods and Mathematical Analysis w https://www.imsi.institute/activities/ data-driven-materials-informatics/

Summer 2024 Long Program: The Architecture of Green Energy w https:// www.imsi.institute/activities/the-architecture-of-green-energy/ Fall 2024 Long Program: Statistical Methods and Mathematical Analysis for Quantum Information Science w https://www.imsi.institute/activities/ statistical-methods-and-mathematical-analysis-for-quantum-informationscience/

Spring 2025 Long Program: Uncertainty Quantification and Al for Complex Systems w https://www.imsi.institute/activities/uncertainty-quantificationand-ai-for-complex-systems/

## **Employment Opportunities**

#### Austria: Klosterneuburg

#### Institute of Science and Technology in Austria

Assistant Professor (tenure-track) and Professor (tenured) positions in Data Science https://jobs.imstat.org/job//70543325

#### Canada: Vancouver, BC

#### University of British Columbia

Assistant Professor (AIM-SI) Tenure Track Position in Statistics https://jobs.imstat.org/job//70823907

#### Canada: Waterloo, ON

#### **University of Waterloo**

Two Positions in Actuarial Science or Quantitative Finance https://jobs.imstat.org/job//70830295

#### Canada: Waterloo, ON

#### **University of Waterloo**

Four positions in Statistics, Biostatistics or Data Science https://jobs.imstat.org/job//70830230

#### China: Shanghai

#### New York University Shanghai

Tenured/Tenure-Track Positions in Operations/Business Analytics https://jobs.imstat.org/job//70831042

#### **China: Shenzhen**

The Chinese University of Hong Kong, Shenzhen, School of Data Science Faculty Openings: Tenured or tenure-track positions (all ranks) https://jobs.imstat.org/job//70844009

#### France: Cergy

ESSEC Business School, Department of Information systems, Decision sciences and Statistics (IDS) Assistant Professor Position (Junior Chair of Excellence in Data Analytics) https://jobs.imstat.org/job//70601158

#### Taiwan: Taipei

National Taiwan University,Institute of Statistics and Data Science Faculty Positions at National Taiwan University--Institute of Statistics and Data Science https://jobs.imstat.org/job//64514112

#### Singapore

#### **National University of Singapore**

#### Assistant, Associate and Full Professor Positions in the Department of Statistics and Data Science

The Department of Statistics and Data Science at the National University of Singapore invites applications for full-time open-rank positions in statistics, data science and related areas at tenure track and tenured levels.

The National University of Singapore offers internationally competitive salaries, generous research funding, travel support, relocation assistance and other benefits. The Department of Statistics and Data Science has nearly 40 faculty members and provides a stimulating research environment.

Applicants must have demonstrated exceptional research potential. For the Associate and Full Professor positions, they must also have a track record of excellence in teaching and leadership.

Please submit a cover letter, curriculum vitae, research and teaching statements, and at least three letters of recommendation either to mathjobs.org or to Ms Muslihah at muslihah@nus.edu.sg.

We have an ongoing recruitment process and will review applications as they are received.

More information about the university and the department can be found at:

https://www.nus.edu.sg

and

https://www.stat.nus.edu.sg/.

#### Taiwan: Taipei

#### National Taiwan University, Institute of Statistics and Data Science

Faculty Positions at National Taiwan University, Institute of Statistics and Data Science https://jobs.imstat.org/job//64514112

#### **Taiwan: Taipei City**

Institute of Statistical Science, Academia Sinica, Taiwan Tenure-Track Faculty Positions https://jobs.imstat.org/job//54387703

#### **United Kingdom: Glasgow**

#### University of Glasgow

Multiple Lecturer / Senior Lecturer / Reader positions in Statistics & Data Analytics (Learning, Teaching & Scholarship Track) https://jobs.imstat.org/job//70507001

#### **United Kingdom: Glasgow**

University of Glasgow Multiple Lecturer / Senior Lecturer / Reader positions in Statistics & Data Analytics (Research & Teaching Track) https://jobs.imstat.org/job//70506862

#### **United States: Fayetteville, AR**

**University of Arkansas, Department of Mathematical Sciences** Assistant Professor of Mathematics https://jobs.imstat.org/job//70786738

#### **United States: Tempe, AZ**

Arizona State University, School of Maths & Stats Assistant/Associate Professor in Theoretical Mathematics (Job #122534) https://jobs.imstat.org/job//70772971

#### **United States: Tempe, AZ**

Arizona State University, School of Maths & Stats Assistant/Associate Professor in Applied and Computational Mathematics https://jobs.imstat.org/job//70772298

#### **United States: Berkeley, CA**

University of California Berkeley Assistant/Associate/Full Professors - Scientific Software and AI for the Chemical Sciences - UC Berkeley https://jobs.imstat.org/job//70822971

#### **United States: Berkeley, CA**

#### University of California, Berkeley - Department of Statistics

Lecturer in Statistics - Department of Statistics - College of Computing, Data Science and Society https://jobs.imstat.org/job//70466260

#### United States: La Jolla, CA

**University of California San Diego** Stefan E. Warschawski Visiting Assistant Professor https://jobs.imstat.org/job//70831046

#### **United States: Los Angeles, CA**

University of Southern California, Marshall School of Business Professor of Data Sciences and Operations (Open Rank) - Statistics https://jobs.imstat.org/job//70057823

#### United States: Los Angeles, CA

**University of California Los Angeles** Assistant Professor of Biostatistics 2023/2024 https://jobs.imstat.org/job//70586204

#### United States: San Diego, CA

San Diego State University Assistant Professor: Data Science/Statistics Education https://jobs.imstat.org/job//70466398

#### United States: Fort Collins, CO

**Colorado State University** Instructor https://jobs.imstat.org/job//70855181

#### **United States: Golden, CO**

**Colorado School of Mines** Department Head and Professor - Department of Applied Mathematics and Statistics https://jobs.imstat.org/job//70737855

#### United States: Champaign, IL

#### Department of Statistics, University of Illinois Urbana-Champaign

Assistant/Associate/Full Professor in Statistics and Data Science-Department of Statistics https://jobs.imstat.org/job//70770807

## **Employment Opportunities** continued

#### **United States: Champaign, IL**

**Department of Statistics, University of Illinois Urbana-Champaign** Assistant/Associate/Full Professor- Neuroinformatics- Department of Statistics https://jobs.imstat.org/job//70831283

#### **United States: Chicago, IL**

University of Chicago Booth School of Business Assistant/Associate Professor of Econometrics and Statistics https://jobs.imstat.org/job//70416640

#### **United States: Notre Dame, IN**

**University of Notre Dame** Assistant or Associate Professor in Statistics/Data Science https://jobs.imstat.org/job//70676043

#### **United States: Boston, MA**

**Boston University Math & Stat Department** Tenure-track Assistant Professor - Probability https://jobs.imstat.org/job//70694262

#### **United States: Boston, MA**

**Boston University Math & Stat Department** Tenure-track Assistant Professor - Probability https://jobs.imstat.org/job//70694262

#### **United States: Cambridge, MA**

Harvard University, Department of Statistics Tenure-Track Faculty in Statistics https://jobs.imstat.org/job//70738707

#### **United States: Ann Arbor, MI**

**University of Michigan** Tenure-Track Assistant Professor & Open Rank https://jobs.imstat.org/job//70230934

#### **United States: Springfield, MO**

**Missouri State University** Assistant Professor Tenure Track https://jobs.imstat.org/job//70664673

#### **United States: Durham, NC**

**Duke University, The Fuqua School of Business** Tenure-Track Faculty Position in Decision Sciences https://jobs.imstat.org/job//70511347

#### **United States: Albuquerque, NM**

The University of New Mexico, Department of Mathematics and Statistics Assistant Professor of Statistics https://jobs.imstat.org/job//66117983

#### United States: New York, NY

NYU Stern School of Business Assistant Professor of Statistics (Tenure-Track) https://jobs.imstat.org/job//70665245

#### **United States: Bethlehem, PA**

Lehigh University, College of Health Biostatistics, Open-Rank Non-Tenure Track Teaching Faculty https://jobs.imstat.org/job//70817689

#### **United States: Swarthmore, PA**

Swarthmore College Tenure Track Assistant Professor in Statistics https://jobs.imstat.org/job//70664626

#### United States: Knoxville, TN

**Department of Mathematics** CAM/Actuarial https://jobs.imstat.org/job//70656730

#### United States: Waco, TX

**Baylor University, Statistics** Assistant Professor, Clinical track https://jobs.imstat.org/job//70502460

#### United States: Waco, TX

**Baylor University, Statistics** Assistant Professor, Tenure-Track https://jobs.imstat.org/job//70502436

#### **United States: Seattle, WA**

**University of Washington, Department of Statistics** Assistant Professor in Statistics https://jobs.imstat.org/job//70511257

## **International Calendar of Statistical Events**

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

#### **Online and Ongoing series**

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

Webinar series w https://www.niss.org/COPSS-NISS-covid-19-datascience-webinar-series

w https://warwick.ac.uk/fac/sci/statistics/news/upcomingseminars/abcworldseminar

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

**ONLINE** 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

#### October 2023

**HYBRID** October 3: London, UK, and online. **RSS Discussion** Meeting: 'Parameterizing and Simulating from Causal Models' by Robin Evans and Vanessa Didelez w https://rss.org.uk/trainingevents/events/key-events/discussion-papers/

And Biological Systems w https://www.imsi.institute/activities/ algebraic-statistics-for-ecological-and-biological-systems/

October 13–14: Washington DC, USA. New Frontiers in Reliability and Risk Analysis: A Tribute to Nozer D. Singpurwalla w https://statistics.columbian.gwu.edu/nds2023

**Distinguished Lecture, by Adrian Raftery w** https://stat.fsu.edu/ HollanderLecture

#### November 2023

November 6–10, 2023: Algebraic Economics w https://www. imsi.institute/activities/algebraic-economics/ November 9–10: Northfield, MN, USA. NISS Ingram Olkin Forum (IOF) workshop: Statistical Challenges in the Analysis of Police Use of Force w https://www.niss.org/events/iof-workshopstatistical-challenges-analysis-police-use-force

#### December 2023

December 11–15, 2023: Bayesian Statistics and Statistical Learning: New Directions in Algebraic Statistics w https://www. imsi.institute/activities/bayesian-statistics-and-statistical-learningnew-directions-in-algebraic-statistics/

December 12–14: London, UK. 19th IMA International Conference on Cryptography & Coding w https://ima.org. uk/21435/19th-ima-international-conference-on-cryptography-andcoding/

*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

*Lims* January 4–7: Melbourne, Australia. IMS Asia Pacific Rim Meeting (IMS-APRM2024) w http://ims-aprm2024.com/

January 10–12: Teaching and Evaluating Data Communication at Scale w https://www.imsi.institute/activities/ teaching-and-evaluating-data-communication-at-scale/

January 22–24: Soesterberg, The Netherlands. 21st Winter School on Mathematical Finance w https://staff.fnwi.uva.nl/a.khedher/ winterschool/winterschool.html

#### February 2024

Weight February 5–9: Decision Making and Uncertainty w https://www.imsi.institute/activities/decision-making-anduncertainty-2024

February 27–March 1: Trieste, Italy. SIAM Conference on Uncertainty Quantification w https://www.siam.org/conferences/ cm/conference/uq24

## International Calendar continued

#### March 2024

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

March 13–16: Houston TX, USA. 2024 Seminar on Stochastic Processes w https://depts.washington.edu/ssproc/

#### May 2024

May 21–24: Utah Valley University, Orem, UT, USA. Eighth International Workshop in Sequential Methodologies w https:// www.uvu.edu/math/events/iwsm2024/index.html

#### June 2024

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

June 25–29: Braga, Portugal. International Symposium on Nonparametric Statistics (ISNPS 2024) w https://w3.math. uminho.pt/ISNPS2024/

#### **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

Lims July 9–10: Salzburg, Austria. Fifth International Workshop on the Statistical Analyses of Multi-Outcome Data w https://samworkshop.github.io/SAM\_2024/

#### August 2024

w https://ww2.amstat.org/meetings/jsm/2024/

Congress in Probability and Statistics w https://www.bernoulliims-worldcongress2024.org/

#### August 2025

**JSM 2025 w** www.amstat.org/meetings/joint-statistical-meetings

#### August 2026

**Lims** August 1–6: Boston, MA, USA. **JSM 2026 w** www.amstat. org/meetings/joint-statistical-meetings

#### August 2027

**Wims** Dates TBA: Location TBA. IMS Annual Meeting at JSM 2027 w www.amstat.org/meetings/joint-statistical-meetings

#### August 2028

**Lims** August 5–10: Philadelphia, PA, USA. **JSM 2028 w** www. amstat.org/meetings/joint-statistical-meetings

#### August 2029

*ims* August 4–9: Seattle, WA, USA. **IMS Annual Meeting at JSM** 2029 **w** www.amstat.org/meetings/joint-statistical-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/

#### Membership and Subscription Information: 2023

#### 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.

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Deadline	Online by	Mailed
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February 1	February 15	March 1
March 15	April 1	April 15
May 1	May 15	June 1
July 1	July 15	August 1
August 15	September 1	September 15
September 15	October 1	October 15
November 1	November 15	December 1
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## the **next** December 2023

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# DEADLINES submissions

## November 1, then December 1

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Stationary measures for the log-gamma polymer and KPZ equation in half-space GUILLAUME BARRAQUAND AND IVAN CORWIN 1830

Scaling limit of the heavy tailed ballistic deposition model with *p*-sticking FRANCIS COMETS, JOSEBA DALMAU AND SANTIAGO SAGLIETTI 1870

Most transient random walks have infinitely many cut times NOAH HALBERSTAM AND TOM HUTCHCROFT 1932

Global information from local observations of the noisy voter model on a graph ITAI BENJAMINI, HAGAI HELMAN TOV AND MAKSIM ZHUKOVSKII 1963

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