

March 2021

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Read it online:
imstat.org/news

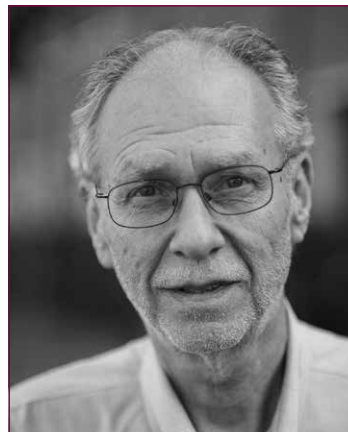


2020 William Benter Prize

Michael Waterman wins 2020 William Benter Prize

The William Benter Prize in Applied Mathematics recognizes exceptional mathematical contributions that have had a lasting impact on scientific, business, finance and engineering applications. It is awarded to an individual for a single contribution or a body of contributions they have achieved in their lifetime of research and achievement in mathematics. The William Benter Prize, amounting to US\$100,000, is awarded every two years, with the recipients giving a lecture at the City University of Hong Kong.

The 2020 William Benter Prize in Applied Mathematics is awarded to **Michael S. Waterman**, University Professor Emeritus at the University of Southern California and Distinguished Research Professor at University of Virginia.



Michael S. Waterman

Michael Waterman moved to USC in 1982 after positions at Los Alamos National Laboratory and Idaho State University. He has a bachelor's degree in Mathematics from Oregon State University, and a PhD in Statistics and Probability from Michigan State University. He has held visiting positions at the University of Hawaii (1979–80), the University of California at San Francisco (1982), Mt. Sinai Medical School (1988), Chalmers University (2000), and in 2000–01 he held the Aisenstadt Chair at University of Montreal. At the beginning of 2020, he became University Professor Emeritus at the University of Southern California and was

appointed Distinguished Research Professor at University of Virginia.

Michael Waterman was named a Guggenheim Fellow in 1995. He is an elected member of the American Academy of Arts and Sciences, the National Academy of Sciences and the National Academy of Engineering; he is also an elected Fellow of the American Association for the Advancement of Science, IMS, SIAM, the International Society of Computational Biology, and the National Academy of Inventors. He is an elected Foreign Member of the French Académie des Sciences and the Chinese Academy of Sciences. He received honorary doctorates from Tel Aviv University and Southern Denmark University.

The William Benter Prizes for 2020 and 2022 will be awarded to the laureates at the International Conference on Applied Mathematics, ICAM 2022, organized at City University of Hong Kong, tentatively in May/June 2022. The prize founder, William (Bill) Benter, is a businessman and investment statistician who spent much of his career in Hong Kong.

Read more about the prize: <https://www.cityu.edu.hk/rcms/WBP/index.html>.

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IMS Members' News

Peter Bickel honored at Pfizer Colloquium

The 26th Pfizer/ASA/UConn Distinguished Statistician Colloquium is scheduled on Wednesday, April 21, 2021, 3:00-5:00pm via webinar. This year's distinguished speaker will be Professor Peter Bickel, Department of Statistics, University of California, Berkeley. The title of his presentation will be *Four Excursions in Genomics*.

The colloquium will be followed by a discussion with Liza Levina from University of Michigan, Ann Arbor, and Purnamrita Sarkar from University of Texas, Austin.

For more information, contact dipak.dey@uconn.edu or see the link below.

The Pfizer Colloquium series ran from 1978 until 2012, and was renewed in 2018. The colloquium series has featured many of the field's big names [see right]. For a complete list, which includes links to their talks, see <https://stat.uconn.edu/pfizer-colloquium/>.

The purpose of the Colloquium is to provide a forum for a distinguished statistician to share and disseminate their unique perspective and work in the theory and/or application of statistics. Starting from 2018, the series has been co-sponsored by Pfizer, the American Statistical Association, and the Department of Statistics at the University of Connecticut.



Peter Bickel

Previous Guests of Honor, dating from 2020 back to 1978:

Nan Laird, Grace Wahba, Pranab K. Sen, Stephen E. Fienberg, Barbara A. Bailar, Emanuel Parzen, C.C. Heyde, David R. Brillinger, Bradley Efron, Janet Norwood, Robert V. Hogg, Ingram Olkin, Theodore W. Anderson, David R. Cox, Erich Lehmann, Herbert Robbins, Herman Chernoff, Frederick Mosteller, Morris H. Hansen, Churchill Eisenhart, Gottfried Noether, C.R. Rao (twice), Harold Cramér, and Jerzy Neyman.

ASA Student Award winners

Two IMS members were among the student winners who will receive financial support to attend the American Statistical Association's 2021 Conference on Statistical Practice. The winners of the ASA John J. Bartko Award were Sara Venkatraman [pictured right], Cornell University, along with Mansi Shah, Primrose Schools Franchising Company.



The winners of the ASA Lester R. Curtin Award were Robert Tumasian [pictured left], Columbia University, along with Melissa Jay, University of Iowa. Read more about the (virtual) conference at <https://ww2.amstat.org/meetings/csp/2021/>.



More Members' News

Joshua M. Tebbs appointed Editor of *The American Statistician*

IMS member **Joshua M. Tebbs** was recently named Editor-in-Chief at *The American Statistician*. He will serve a three-year term (2021–2023), overseeing the review process for all submissions to the journal. Dr. Tebbs is Professor and Chair in the Department of Statistics at University of South Carolina. He obtained his BS in Mathematics and MS in Statistics from University of Iowa and his PhD in Statistics from North Carolina State University. His primary research interests are in the development of statistical methods for categorical data, especially aggregated or group tested data and their application in infectious disease screening, as well as in general biostatistical methods and problems involving ordering or shape restrictions. He is an elected member of the ISI and a fellow of the ASA, and his research program is funded by the National Institutes of Health (NIH). He is also an Associate Editor at *Statistics in Medicine* and a member of the Biostatistical Methods and Research Design Study Section of the NIH. Dr. Tebbs's web page is <https://people.stat.sc.edu/tebbs/>.



Joshua Tebbs

James O'Malley receives ISPOR Award for Scientific Excellence

James O'Malley, a professor of The Dartmouth Institute for Health Policy and Clinical Practice and of biomedical data science at the Geisel School of Medicine and director of the Program in Quantitative Biomedical Sciences, has received the 2019 ISPOR (International Society for Pharmacoeconomics and Outcomes Research) Award for Excellence in Health Economics and Outcomes Research Methodology.

A. James O'Malley received his PhD in Statistics (1999) from the University of Canterbury, New Zealand, and an MS degree, along with the L.J. Cote award for excellence in Applied Statistics from Purdue University. His methodological interests encompass multivariate hierarchical models, causal inference, using instrumental variables, Bayesian inference and social network analysis. Much of his work is motivated by problems in health services research. He has published over 170 peer-reviewed research papers. In 2011, he received the HPSS Mid-Career Excellence award and in 2012 was elected ASA fellow.

"I was excited to receive the news that I had been selected as this year's recipient," says O'Malley, who will receive the award at the society's upcoming annual meeting. "Given today's increasingly collaborative and interdisciplinary research arena, it is very meaningful. And I think it depicts the profession of statistics in a very positive light."

James O'Malley's paper, "Modeling a Bivariate Residential-Workplace Neighborhood Effect When Estimating the Effect of Proximity to Fast-Food Establishments on Body Mass Index," was published online in *Statistics in Medicine* in November 2018 with co-authors Peter James, Todd A. MacKenzie, Jinyoung Byun, S. V. Subramanian and Jason P. Block: <https://doi.org/10.1002/sim.8039>.

Xuming He voted ISI President-Elect

Xuming He, University of Michigan, will serve as President-Elect (2021–23) of the International Statistical Institute (ISI): <https://www.isi-web.org/news-featured/20332-2020-isi-officers-elections>.

The ISI, formally established in 1885, is a non-profit, non-government organization and has had consultative status with the Economic and Social Council of the United Nations since 1949.

= access published papers online

IMS Journals and Publications

Annals of Statistics: Ming Yuan, Richard Samworth

<https://imstat.org/aos>
<https://projecteuclid.org/euclid.aos>

Annals of Applied Statistics: Karen Kafadar

<https://imstat.org/aoas>
<https://projecteuclid.org/aoas>

Annals of Probability: Amir Dembo

<https://imstat.org/aop>
<https://projecteuclid.org/aop>

Annals of Applied Probability: Francois Delarue, Peter Friz

<https://imstat.org/aap>
<https://projecteuclid.org/aopap>

Statistical Science: Sonia Petrone

<https://imstat.org/sts>
<https://projecteuclid.org/ss>

IMS Collections

<https://projecteuclid.org/imsc>

IMS Monographs and *IMS Textbooks*: Nancy Reid

<https://www.imstat.org/journals-and-publications/ims-monographs/>

IMS Co-sponsored Journals and Publications

Electronic Journal of Statistics: Domenico Marinucci

<https://imstat.org/ejs>
<https://projecteuclid.org/ejs>

Electronic Journal of Probability: Andreas Kyprianou

<https://projecteuclid.org/euclid.ejp>

Electronic Communications in Probability:

Giambattista Giacomini
<https://projecteuclid.org/euclid.ecp>

Journal of Computational and Graphical Statistics:

Tyler McCormick <https://www.amstat.org/ASA/Publications/Journals.aspx>
 log into members' area at imstat.org

Statistics Surveys: David Banks

<https://imstat.org/ss>
<https://projecteuclid.org/euclid.ssu>

Probability Surveys: Ben Hambly

<https://imstat.org/ps>
<https://www.i-journals.org/ps/>

IMS-Supported Journals

ALEA: Latin American Journal of Probability and Statistics: Roberto Imbuzeiro Oliveira

<http://alea.impa.br/english>

Annales de l'Institut Henri Poincaré (B): Grégory Miermont, Christophe Sabot

<https://imstat.org/aihpb>
<https://projecteuclid.org/aihpb>

Bayesian Analysis: Michele Guindani

<https://projecteuclid.org/euclid.ba>

Bernoulli: Mark Podolskij, Markus Reiß

<https://www.bernoulli-society.org/>
<https://projecteuclid.org/bj>

Brazilian Journal of Probability and Statistics:

Enrico Colosimo
<https://imstat.org/bjps>
<https://projecteuclid.org/bjps>

IMS-Affiliated Journals

Observational Studies: Dylan Small

<https://obsstudies.org/>

Probability and Mathematical Statistics: K. Bogdan,

M. Musiela, J. Rosiński, W. Szczotka, & W.A. Woyczyński
<http://www.math.uni.wroc.pl/~pms/>

Stochastic Systems: Shane Henderson

<https://pubsonline.informs.org/journal/stsy>

Radu's Rides: A Valentine's Day Special

Contributing Editor **Radu Craiu** offers some words of advice:

Nothing is more random than love. Its asymptotic properties are far from well understood, its underlying processes are certainly not stable and their convergence at best questionable. It is no surprise then that there are important advantages in love provided by a statistical training. Simply put, Occam's razor will give you an edge at any relationship stage.

Say you are on one of your first dates and your potential partner subtly inquires about the expected length of courtship before a love effect is firmly identified in the form of a desire to transition to the *next stage*. This may be the time to bring casually into conversation design of experiments as a long-honored field in our discipline. You may even go a little further and describe in broad strokes fractional factorial designs and their impact on collecting data before a decision is reached or, if you would like to enjoy your single life a little longer, you could take your time with a full factorial design.

If you feel emboldened by your date's not running away, you may go even further and allude gently to issues of identifiability that have kept many of us up at night. If that's too big a mountain to climb on such a momentous day, you could draw some weak connections between identifiability and unimodality, and mention that you believe in the global supremum implied by the "love of one's life", but you are also ready to get there via some intriguing local optima. Refrain from mentioning your attraction to saddle points, or the issue of label switching. As a Bayesian, you will know that multiple starting points for your random processes is a good way to achieve good mixing. The concepts of prior-data conflict or single-observation unbiased prior are best kept to yourself, lest they become weapons in the hands of untrained individuals. The replicability (not reproducibility) crisis usually extends to second dates, and the only person to blame is only you and your nonchalant use of *p*-hacking (should be pronounced like faking).

If it is not your first date and you are in an advanced stage of relationship-itis, sooner or later you will likely have to dive into a discussion on coupling and coalescing time. It is of paramount importance to understand that no matter how perfect your samples have been, coupling from the past rarely gets you exactly what you want. While bracing for impact, mention that this type of change involves a significant re-allocation of resources and remind everyone involved that, as many a grant writer can testify, a sample size calculation is not out of the question. This novel angle may release some of the pressure and allow you to delve into questions such as "What is a sample?" which can shine some light on your brightness, especially if you steer away from the whole "training vs testing

sample" dilemma.

Depending on your propensity to settle down, you may define the experimental units as days spent together, weeks, or even years. If you go for the latter, do not blame this writer for your running out of emotional resources before the study is completed. If you are a probabilist, you may panic at the thought of stepping outside a comfortable martingale and decide to choose your fate by flipping a coin. I urge you to resist the temptation, but if you must, at least do it after your partner thoroughly understands the concept of a Bernoulli factory—at least this will buy you a year or so.

In all matters related to love life, the experience accumulated from others' mistakes demonstrates that it is best to stay away from using extreme terms in our professional jargon, such as loss and utility functions, squared error, critical region, swindles or conditional statements—remember, love must remain unconditional.

For those who have passed the purgatory levels of dating and find themselves in a steady regime involving acceptances, rejections, multiple revisions and extended silences, an altogether different arsenal of methods comes in handy. Anyone in a healthy relationship will tell you that what is said in a couple is merely the tip of the metaphorical (and invisible) iceberg of feelings. The study of hidden Markov models will certainly come in handy when you try to infer the latent state of your relationship from a slightly over-burned scone. The fact that some are using the same methods to track sharks should only fixate the idea a little more for you. If you are an expert in computing the chance of extreme events, you are a godsend for all your friends' relationships. Based on the faintest of indices which, to the untrained eye, look like random rolls of celestial dice, you will be able to anticipate events that can subject a couple to Floridian floods and Californian fires *at the same time*.

I have barely scratched the surface of what some solid statistical training can do for your love life. But there is so much more I wanted to tell you. When you're trying too hard to please everyone and their cousin, remember variance–bias trade-off; if you fail to live up to expectations, make sure you let them know it's not their fault, but rather your regression towards the mean¹. If you get carried away in discussions, maybe it is time to remember that stopping times cannot depend on future events. Does your partner get caught up too much in day-to-day minutiae? Remind them that the road to fractals is paved with chaos. Above all else, embrace your status as a random process with the associated risk, occasional boundary-crossings and, I hope, plenty of non-stationarity.

.....

¹ See also "XL-Files: Lectures (Marriages?) That Last" (2016) *IMS Bulletin* 45(4).

An Update from the IMS President

A Time for Reflection and Reinvigoration

IMS President Regina Liu reports on recent developments, and outlines some exciting new initiatives:

It has been a year of stress and anxiety, with the pandemic overshadowing all aspects of our lives. We have all continued to adapt, from the initial struggles to the present familiarity with all things virtual in our daily routines. The weariness and apprehension from this long confinement has also given us much time for reflection. Re-reading my statement for running for the IMS President-Elect in 2019, when life was so different:

“The IMS is the foremost society in statistics and probability worldwide, and I am deeply honored to be nominated as its President-Elect. Recent years have witnessed a phenomenal expansion of statistics and probability in all directions of data science. With this success come also many challenges and opportunities, which I hope to address if elected. In its broadest sense, data science interacts with many fields in both science and the humanities, and data science researchers can be widely dispersed in academia, high tech and financial industries, or government agencies. The IMS is ideally positioned to provide a common core and a welcoming home for all, including an effective platform for interactions and dissemination of important advances. Simultaneously, a goal of the IMS should be to raise the profile of the field and to ensure an influx of fresh talent to keep it vibrant and dynamic.”

Some of those goals would require extra efforts to overcome the newly confined working environment. But this confinement also provides an opportunity for reinvigorating the IMS! I write this note to report some of the new and ongoing initiatives in this direction. These initiatives reflect continuing progress from previous



Regina Liu

IMS leadership, dedication from many volunteers, ideas from many of you, and my own long experience as an IMS member, in various roles. I hope they will help engage more of you in the discussions of ideas for sustaining the strength of the IMS, furthering its relevance and prestige, and better serving its members.

IMS NRG (New Researchers Group)

The NRG is the fruit of continuing efforts of several past presidents, starting from Bin Yu to Susan Murphy, to engage and empower new researchers in IMS. Thanks to Alexander Volfovsky and James Johndrow, the NRG is now officially an IMS group with its own bylaws and leadership. The NRG now has representatives on several key IMS committees, as well as designated invited sessions in IMS meetings. James, the current NRG President, will provide more details in the next *Bulletin*. We have every confidence that IMS will have a vibrant and dynamic NRG.

IMS Watercooler Chat

This is a new support group, covering

a broad range of research expertise and career experience, whose goal is to provide support for IMS members, especially New Researchers. We are setting up a new web-link “IMS Watercooler Chat” for people to link up, just by a click, with an experienced mentor to discuss topics in career development, networking opportunities, job change, etc. I thank Jessica Utts for kindly agreeing to lead this effort. More details are forthcoming in the next *Bulletin*.

Task Force on IMS Awards and Lectures

I would like to thank this task force (Rina Foygel Barber, David Blei, Victor Panaretos, Bernard Silverman [Chair], and Bin Yu) for their work in providing a set of excellent recommendations for raising the prestige and relevance of IMS awards and lectures. The impact of those recommendations will be no doubt far-reaching, so stay tuned!

IMS Membership Survey coming in early March, PLEASE RESPOND!

We designed this survey to update our membership database, and, more importantly, to get your input on how the IMS can better serve its members. I thank Nicole Lazar and Jean Opsomer for their efforts on this project.

I am grateful to the many of you who have worked with me or worked for IMS. I look forward to new ideas and opportunities to work with you to make IMS a society to which we all belong with pride.

Regina Y. Liu

President of the Institute of Mathematical Statistics, 2020–2021
 president@imstat.org
 rliu@stat.rutgers.edu

Preview of Special IMS Lectures

IMS Le Cam Lecture: Jianqing Fan



Jianqing Fan

Jianqing Fan is Frederick L. Moore Professor of Finance, Professor of Operations Research and Financial Engineering, Former Chairman of Department of Operations Research and Financial Engineering and Director of Committee of Statistical Studies at Princeton University, where he directs both statistics and financial econometrics labs. After receiving his PhD from the University of California at Berkeley, he was appointed as assistant, associate, and full professor at the University of North Carolina at Chapel Hill (1989–2003), professor at the University of California at Los Angeles (1997–2000), professor and chair at Chinese University of Hong Kong, and professor at the Princeton University (2003–). He has served as president of the IMS and the International Chinese Statistical Association. He co-edits the *Journal of Business and Economics Statistics*, and was the co-editor of *The Annals of Statistics*, *Probability Theory and Related Fields*, *Econometrics Journal*, and *Journal of Econometrics*. His published work on statistics, machine learning, finance, and computational biology has been recognized by the 2000 COPSS Presidents' Award, the 2007 Morningside Gold Medal of Applied Mathematics, Guggenheim Fellow in 2009, P.L. Hsu Prize in 2013, Royal Statistical Society Guy medal in silver in 2014, Senior Noether Scholar

Award in 2018, and election to Academician of Academia Sinica and fellow of American Association for Advancement of Science, IMS, ASA, and the Society of Financial Econometrics.

Jianqing will give this Le Cam Lecture at the Joint Statistical Meetings in Seattle, August 7–12, 2021.

A Theory of PCA and Spectral Clustering

Principal Component Analysis (PCA) is a fundamental tool in statistics and machine learning. Its applications range from factor analysis and tensor decomposition to blind deconvolution and manifold learning. The computational efficiency and statistical accuracy make PCA a top choice for analyzing massive data. While existing study of PCA focuses on the recovery of principal components and their associated eigenvalues, there are few precise characterizations of individual principal component scores that yield low-dimensional embedding of samples. Since all the downstream tasks count on the quality of embedding, the lack of investigation hinders the analysis of various spectral methods for community detection, clustering, ranking, synchronization and so on.

To analyze the performance of spectral methods, one often relies on the uniform (ϵ) control of errors across individual principal component scores. However, uniform control over all entries often leads to vacuum bounds if the sample size is too small or the signal is too weak. In that case, one can only hope to establish bounds for a reasonably large proportion of the entries based on more refined analysis. In this talk, we first develop a perturbation theory for a hollowed version of PCA in reproducing kernel Hilbert spaces which provably improves upon the vanilla PCA in the presence of heteroscedastic noises. Through a novel analysis of eigenvectors, we investigate entrywise behaviors of principal component score vectors and show that they can be approximated by linear functionals of the

Gram matrix in norm, which includes and as two special cases. The entrywise analysis is formalized via the powerful leave-one-out decoupling technique.

We apply the newly developed perturbation theory to sub-Gaussian mixture models for clustering analysis and contextual stochastic block models for community detection. Intuitively, stronger signal allows for larger p in the analysis and makes tighter error control possible. For the sub-Gaussian mixture model, our choice of p depends on the signal-to-noise ratio characterized by the separation between components, the sample size and the dimension. This adaptive choice yields optimality guarantees for spectral clustering. The misclassification rate is explicitly expressed as a simple exponential function of the signal-to-noise

Continues on page 7

ratio, which implies exact recovery as a specific example. Perhaps surprisingly, the analysis reveals intimate connections between the fully unsupervised spectral estimator and Fisher's linear discriminant analysis, which is a supervised classification procedure. Our results significantly improve upon prior arts which mostly focus on more complicated algorithms such as semidefinite programs or impose extra restrictions on the dimension and the signal strength.

In the contextual community detection problem, one observes both the network connections of nodes and their attributes. The network connections are modeled through a stochastic block model and the node attributes are modeled through a Gaussian mixture model that is independent of the network given the communities. The theory and linearization of eigenvectors lead to a tuning-free aggregated spectral estimator that is conceptually simple and computationally efficient. Remarkably, it adaptively integrates the two sources of information based on their relative signal strengths. The estimator achieves the information threshold for exact recovery and has an optimal misclassification rate below that threshold. Moreover, our results readily imply optimal spectral clustering for the stochastic block model and Gaussian mixture model separately. Simulation experiments lend further support to our theoretical findings.

This is joint work with Emmanuel Abbe (EPFL) and Kaizheng Wang (Columbia University). The manuscript is available at [arXiv:2006.14062](https://arxiv.org/abs/2006.14062).

Remembering Lucien Le Cam

Every three years, the IMS chooses a Le Cam Lecturer, one of our most prestigious awards. But who was Le Cam, and why was his work so important? The following is slightly condensed from the obituary written by Rudolf Beran and Grace Yang, which was published in the *IMS Bulletin* in September 2000.



George M. Bergman

LUCIEN LE CAM, one of the most important mathematical statisticians in our century, died on April 25, 2000. He was Professor Emeritus of Mathematics and Statistics at the University of California, Berkeley. His wife of 48 years, Louise Romig Le Cam [*daughter of statistician Harry Romig*], their children Denis, Steven, Linda and son-in-law Rick Kreisler, and his brother Jean Le Cam survive him.

Born on November 18, 1924 in Croze, Creuse, central France, Le Cam was a *fils de paysans* (roughly, son of farmers) in Felletin, where many years later his brother Jean became Mayor. He graduated in 1942 from a Catholic boarding school in Guéret. Higher education would be possible on scholarships only. He attended a seminary after high school. Unable to accept that permission was needed from the head priest to read chemistry books, he quit the seminary after one day. By then it was too late in the year to apply for a scholarship in the nearby University of Clermont-Ferrand. His only option, with partial financial support, was to take mathematics courses at a lycée in Clermont-Ferrand. He gave up chemistry for mathematics, stayed at the lycée for two years, and then passed the examination in general mathematics set by the University of Clermont-Ferrand. In 1944, he registered as a student at the University of Paris. A job opportunity that required a “certified” statistician prompted him to pass examinations on calculus, rational mechanics, and statistics, whereupon the university awarded him the degree Licence ès Sciences in 1945.

Through an introduction by Darmois, Le Cam worked for E. Halphen at Electricité de France for the next five years. He investigated how to operate dams for best results and how to estimate probabilities of drought or flood. In his first publication at age 23, he introduced characteristic functionals (after but independently of Kolmogorov) to study the temporal and spatial flows of streams. The paper was communicated by Emil Borel to the French Academy. A subsequent publication on precipitation in the Second Berkeley Symposium (1961) is known in hydrology as Le Cam's model.

Le Cam and several other young people formed a weekly seminar on statistics mentored by Darmois at the University of Paris. An encounter with Jerzy Neyman around Easter 1950 resulted in a one-year invitation to Berkeley as an instructor. Urged by Neyman, he stayed as a graduate student and received a PhD in 1952. Almost immediately, he produced his first PhD student, Julius Blum. The astonishing speed of Le Cam's accomplishments was not without difficulties: the Dean was unwilling to designate a fresh new PhD holder as the official thesis advisor of another student.

Appointed as Assistant Professor of Mathematics in 1953, Le Cam joined the new Department of Statistics at its founding in 1955 and was promoted to full Professor in 1960. He served as department chairman from 1961 to 1965 and was a co-editor with Neyman of the celebrated *Berkeley Symposia* volumes. He remained in Berkeley except for a brief stint (1972–73) as Director of the Centre de Recherches Mathématiques in Montreal, Canada.

The 38 PhD students he supervised at Berkeley include prominent names in our field.

Remembering Lucien Le Cam continued

Continued from page 7

His legendary broad knowledge was reflected in the wide range of his students' thesis topics. Odd Aalen wrote a thesis in biostatistics on survival analysis; Le Cam's last student, Jim Schmidt, was in physics. He was generous with ideas in discussions with students and others. He was renowned for upholding a strong standard of fairness and supported the students' Free Speech Movement in the mid-1960s. In 1991, Le Cam became Professor Emeritus, a transition that scarcely changed the daily pattern of this outstanding scholar and teacher. As before, any who wished to discuss research were welcome to enter his open office door.

Le Cam was a principal architect of the modern asymptotic theory of statistics. His life-work was a coherent theory of statistics in which asymptotic "approximations" played a strong role. His asymptotic investigations began with his PhD thesis, published in 1953, in which he proved that Bayes estimates for one-dimensional parameters possess two asymptotic "optimality" properties: local asymptotic minimaxity and local asymptotic admissibility. In addition, he showed that maximum likelihood estimates for one-dimensional parameters inherit both properties by being "close" to the Bayes estimates. Prescient in his thesis was the study of superefficient estimates for one-dimensional parameters. A technical curiosity in this initial setting, superefficiency was later found pertinent to the James–Stein estimator and signal recovery.

Le Cam's most widely-recognized contributions were the local asymptotic normality condition (LAN) in 1960, the contiguity concept and its consequences, and simple one-step constructions of asymptotically optimal estimates. Around 1970, Jaroslav Hájek and Nobuo Inagaki independently formulated the convolution theorem for parametric estimation. Using Le Cam's LAN concept, Hájek proved the convolution theorem and, in another paper, the local asymptotic minimax theorem under elegantly minimal assumptions. These theorems, as well as Hájek's earlier use of contiguity in studying rank tests, revealed to others the remarkable potential in Le Cam's ideas, and popularized them.

Hájek's results quickly prompted Le Cam to publish deep generalizations that also cover non-LAN models, such as the Uniform $(0, q)$. The broader results are usually called the Hájek–Le Cam convolution and local asymptotic minimax theorems. Years later, ideas generated in this work on the convolution theorem proved central in understanding the asymptotic behavior of bootstrap distributions.

While still working on LAN conditions, Le Cam simultaneously tackled a more basic issue in statistical decision theory. He introduced a distance and deficiency between statistical experiments

in 1959 and treated insufficiency in 1974. The Le Cam distance and deficiency are fundamentally important in making approximations and asymptotics fit within Wald's (1950) theory of decision functions. Le Cam's generalization of decision theory appeared in a landmark paper in 1955. A consequence of the Le Cam distance was the concept of "weak convergence of experiments." This convergence is significantly weaker than weak convergence of likelihood ratio processes because it does not require tightness of the processes. Tightness itself was pioneered by Le Cam (1957). Weak convergence of experiments lay behind his generalizations of the asymptotic minimax and convolution theorems. Recent results on the asymptotic equivalence of nonparametric density estimation and nonparametric regression have again revealed the scope of Le Cam's mathematical structure.

In other work, Le Cam introduced a concept of metric dimension with which he proposed a new method of constructing confidence sets for arbitrary parameter spaces. This notion has helped unify studies of "rates of convergence" of estimates. Outside statistics proper, Le Cam investigated convergence of measures on topological spaces and gave what may be the first usable definition of (bounded) Radon measures on completely regular spaces. He obtained an approximation theorem for the Poisson binomial distribution (1960) and some new inequalities for approximating the distributions of sums of random variables by infinitely divisible ones. Motivated by problems in other fields, Le Cam worked on stochastic models for rainfall, for cancer metastasis, for effects of radiation, for sodium channels, and more. He co-edited a 1982 book with Neyman on *Probability Models and Cancer*.

Le Cam's monumental work on asymptotics culminated in his "big" book, *Asymptotic Methods in Statistical Decision Theory*, which was published in 1986. Through formal comparison of statistical experiments by means of the Le Cam distance and deficiency, the book quantifies the extent to which two statistical problems are similar and the extent to which a procedure approximately efficient in one problem can be mapped into a procedure approximately efficient in the other. Asymptotic decision theory is then developed from this point of view. His abstract style of writing may well reflect his life-long passion for reading Bourbaki. The 1990 book *Asymptotics in Statistics: Some Basic Concepts*, co-authored with Grace Yang, re-expresses Le Cam's earlier research results from the viewpoint of his later work. The manuscript of the second edition was completed just before his death.

Active to the end, he is deeply missed. May the earth rest lightly upon him.

Recent papers: two co-sponsored journals

Electronic Journal of Statistics

The *Electronic Journal of Statistics (EJS)* publishes research articles and short notes in theoretical, computational and applied statistics. The journal is open access. Articles are refereed and are held to the same standard as articles in other IMS journals. Articles become publicly available shortly after they are accepted. Read it at <https://projecteuclid.org/euclid.ejs>

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Consistency of the Frequency Domain Bootstrap for differentiable functionals.	PATRICE BERTAIL AND ANNA E. DUDEK; 1–36
Discrete mixture representations of parametric distribution families: Geometry and statistics	LUDWIG BARINGHAUS AND RUDOLF GRÜBEL; 37–70
Inference on the change point under a high dimensional sparse mean shift.	ABHISHEK KAUL, STERGIOS B. FOTOPOULOS, VENKATA K. JANDHYALA, AND ABOLFAZL SAFIKHANI; 71–134
Two-sample tests for high-dimensional covariance matrices using both difference and ratio	TINGTING ZOU, RUITAO LIN, SHURONG ZHENG, AND GUO-LIANG TIAN; 135–210
On parameter estimation of the hidden Gaussian process in perturbed SDE.	YURY A. KUTOYANTS AND LI ZHOU; 211–234
Risk of estimators for Sobol' sensitivity indices based on metamodels	IVAN PANIN; 235–281
Bootstrap estimators for the tail-index and for the count statistics of graphex processes	ZACHARIE NAULET, DANIEL M ROY, EKANSH SHARMA, AND VICTOR VEITCH; 282–325
Finite-sample analysis of M -estimators using self-concordance	DMITRII M. OSTROVSKII AND FRANCIS BACH; 326–391
Asymptotic validity of bootstrap confidence intervals in nonparametric regression without an additive model	LIANG WANG AND DIMITRIS N. POLITIS; 392–426
SIRUS: Stable and Interpretable RULE Set for classification.	CLÉMENT BÉNARD, GÉRARD BIAU, SÉBASTIEN DA VEIGA, AND ERWAN SCORNET; 427–505
Bayesian inference on volatility in the presence of infinite jump activity and microstructure noise.	QI WANG, JOSÉ E. FIGUEROA-LÓPEZ, AND TODD A. KUFFNER; 506–553
Estimating covariance and precision matrices along subspaces.	ŽELJKO KERETA AND TIMO KLOCK; 554–588
Estimating multi-index models with response-conditional least squares.	TIMO KLOCK, ALESSANDRO LANTERI, AND STEFANO VIGOGNA; 589–629
Optimal group testing designs for prevalence estimation combining imperfect and gold standard assays	SHIH-HAO HUANG, MONG-NA LO HUANG, AND KERBY SHEDDEN; 630–649
Estimation of a density using an improved surrogate model	MICHAEL KOHLER AND ADAM KRZYŻAK; 650–690
Convergence analysis of a collapsed Gibbs sampler for Bayesian vector autoregressions.	KARL OSKAR EKVAL AND GALIN L. JONES; 691–721
On the estimation of latent distances using graph distances	ERY ARIAS-CASTRO, ANTOINE CHANNAROND, BRUNO PELLETIER, AND NICOLAS VERZELEN; 722–747
Bi-selection in the high-dimensional additive hazards regression model.	LI LIU, WEN SU, AND XINGQIU ZHAO; 748–772
Nonparametric sequential change-point detection for multivariate time series based on empirical distribution functions	IVAN KOJADINOVIC AND GHISLAIN VERDIER; 773–829
High-dimensional variable selection via low-dimensional adaptive learning	CHRISTIAN STAERK, MARIA KATERI, AND IOANNIS NTZOUFRAS; 830–879
Finite space Kantorovich problem with an MCMC of table moves	GIOVANNI PISTONE, FABIO RAPALLO, AND MARIA PIERA ROGANTIN; 880–907

Statistics Surveys

Statistics Surveys publishes survey articles in theoretical, computational, and applied statistics. The style may range from reviews of recent research to graduate textbook exposition. The essential requirements are a well specified topic and target audience, together with clear exposition. Read it at <https://projecteuclid.org/euclid.ssu>

Volume 14, 2020

Estimating the size of a hidden finite set: Large-sample behavior of estimators.	SI CHENG, DANIEL J. ECK, AND FORREST W. CRAWFORD; 1–31
Flexible, boundary adapted, nonparametric methods for the estimation of univariate piecewise-smooth functions	UMBERTO AMATO, ANESTIS ANTONIADIS, AND ITALIA DE FEIS; 32–70
Can p -values be meaningfully interpreted without random sampling?	NORBERT HIRSCHAUER, SVEN GRÜNER, OLIVER MUSSHOF, CLAUDIA BECKER, AND ANTJE JANTSCH; 71–91



Student Puzzle Corner 33

Puzzle Editor Anirban DasGupta proposes a palindrome problem in the domain of probabilistic number theory. It will take careful thinking and patience to work out the more difficult parts of this problem. I try to give you hints, as you move from one part to the next. Do however many parts you can do. The problem is about palindromes. A positive integer is called a palindrome if it reads the same from left to right and right to left. All single digit numbers, namely, $1, 2, \dots, 9$ are regarded as palindromes; 101 is a palindrome, or 29092, but not 111011, or 022. A zero in the first position is not allowed in the definition of a positive integer.

For $n \geq 1$, define X_n to be a randomly chosen palindrome of length exactly equal to n . For example, X_3 could be 101. Also define Y_n to be a randomly chosen palindrome less than or equal to 10^n .

For example, X_3 could be 1, or 99, or 505, etc.

Here are the parts of our problem.

- Calculate $E(X_2)$, $E(X_3)$ exactly; i.e., write the answers as rational numbers.
- Calculate $E(X_4)$, and then, $E(Y_2)$, $E(Y_3)$, $E(Y_4)$ exactly.
- Write a formula for $E(X_n)$ for a general n . Be careful about whether n is odd or even.
- Calculate $E(Y_8)$, $E(Y_{12})$ exactly, and recall from part (b) $E(Y_4)$.
- Conjecture what $E(Y_n)$ is for a general even n .

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

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

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

Deadline: April 25, 2021

Solution to Puzzle 31

The puzzle was this maximum likelihood estimation problem in a badminton game:

Between two badminton players A and B, player B has a probability $p_1 = p$ of returning a serve or a shot from A, and A has a probability $p_2 = cp$ of returning a serve or shot from B, where c is a fixed positive constant. We make the usual independence assumption among shots. If A fails to return a shot or a serve from B, the next serve is made by B, and vice versa. We also assume that the beginning serve in any play is always done successfully. Suppose A begins the first play by serving to B. In 5 consecutive plays, the total number of shots successfully returned by the players before the first failure were: 8, 7, 0, 5, 9.

- Calculate the likelihood function.
- Find the maximum likelihood estimate of p .
- Take p_1 and p_2 to be general. A serves to B in the first play and B successfully returns the serve. But A fails to return this volley from B. The serve now turns over to B, and A is able to return the serve. But B fails to return the volley from A. And so it goes on, for a total of n plays — in other words, the number of shots successfully returned is always 1. What will happen to the MLEs of p_1 and p_2 in this scenario?

Student Puzzle Editor Anirban DasGupta explains the solution:

For part (a), writing q for $p_2 = cp$, the likelihood function is

$$((1-p)p^4q^4)(p^4q^3(1-q))((1-q))(q^3p^2(1-p))(p^5q^4(1-q)) = p^{29}(1-p)^2(1-cp)^3.$$

For part (b), the MLE of p is $(32c+31)/68c$, if it is not larger than 1.

For part (c), the likelihood function is a product of betas, $(p(1-p))^{n/2}(q(1-q))^{n/2}$.

The modal values converge to $1/2$.



OBITUARY: Dmitry Ioffe

1963–2020

IMS Medallion Lecturer who was due to give his lecture at the Seminar on Stochastic Processes in March 2021 (meeting now rescheduled to 2022).

DMITRY (DIMA) IOFFE was born in Moscow in April 1963. In 1976 his family applied for a permission to leave the USSR for Israel but was refused. As a “refusenik” Dima had no chance to be accepted to the Moscow State University (or any other prestigious institute of higher education), although he finished one of the best Moscow schools with mathematical orientation. So, he enrolled in the Moscow Mining Institute and got an equivalent of M.Sc. in System Engineering in 1985. He was eventually allowed to leave the USSR (with his wife and a two-year-old daughter) in 1987. Shortly after coming to Israel he joined the graduate program in the Department of Mathematics at the Technion, and in 1991 received his PhD. He spent the following years in UC Davis (1991–92), Courant Institute at NYU (1992–93), Northwestern University (1993–95) and the Weierstrass Institute of Applied Mathematics and Stochastics in Berlin (1995–97). In 1997 he returned to the Technion where he became a full professor in 2007.

Dima made fundamental contributions to some areas of the probability theory and statistical mechanics, including random

interface models, interacting particle systems, polymers in random environment, random perturbations of dynamical systems, metastability and homogenization. His results gained prominence already after his early works on large deviations in the Ising Model. He got numerous awards for his research, including the Humboldt Research Award in 2011, the Prix de l’Institut Henri Poincaré in 2004–5 and The Kurt Mahler Prize Fund in Mathematics in 2000. In 2014 he obtained the Alexander Goldberg chair in Management Sciences.

Dima’s scientific life was very active. He held visiting positions and worked with many collaborators in Germany, USA, Canada, Japan, France, Great Britain, Switzerland, Italy. His connection with the Institute for Applied Mathematics at the Hausdorff Center in Bonn should be specifically mentioned. Along with many publications in leading journals, he gave more than 80 invited talks, taught 10 mini-courses and co-organized more than 10 conferences and workshops.

Dima was fully committed to science and the scientific community. He advised many graduate students and post-docs,



Dmitry (Dima) Ioffe

quite a few of whom now hold faculty positions in leading universities worldwide. He served in the Minerva fellowship committee as well as in the editorial boards of leading probability journals and held key roles in the department and the Technion.

The scope of Dima’s interest outside science was also remarkably wide. He had a deep knowledge of literature and history (especially of Israel and the Middle East: “It makes you feel four-dimensional”). He was a real connoisseur of good wine and always enjoyed a good company. He was very athletic and remained in excellent physical shape up to (and even for some time after) the beginning of his illness. He will be remembered as a good father of two daughters, a proud and dedicated grandfather, and a friendly and lively person with a remarkable sense of humor.

Dima passed away in October 2020 in Haifa at the age of 57, after a long battle with a grave illness. He was engaged in research and teaching and kept his spirits high until the very last moment. The department of Industrial Engineering and the Technion have lost one of their most kind-hearted, conscientious, brilliant, and original members. He will be missed dearly.

Published on the website of the Faculty of Industrial Engineering & Management, Technion Israel Institute of Technology

Obituaries in the *IMS Bulletin*

We publish obituaries in the *IMS Bulletin* of any IMS member or IMS Fellow — and, on occasion, of other prominent members of our communities. Sometimes, the news of someone’s passing may take some time to reach us, so please, if you hear that a colleague or collaborator has died, do let us know so that we can arrange for an obituary to be written. If you would like to submit an obituary, please email bulletin@imstat.org. Thank you.

OBITUARY: Arianna Rosenbluth

1927–2020

Physicist and computer scientist who wrote the first full implementation of the Markov chain Monte Carlo method.

ARIANNA W. ROSENBLUTH passed away on December 28, 2020.

Born on September 15, 1927, in Houston, Texas, Arianna attended university at the Rice Institute, now Rice University, where she received a Bachelor of Science in 1946. In 1947 she obtained her Master of Arts from Radcliffe College before beginning her PhD in physics at Harvard University under the supervision of Nobel Laureate John Hasbrouck Van Vleck. She completed her thesis, entitled *Some Aspects of Paramagnetic Relaxation*, in 1949 at the age of 22.

After completing her thesis Arianna won an Atomic Energy Commission post-doctoral fellowship to Stanford University, which she attended before moving to a staff position at Los Alamos National Laboratory. Here, her research focused on atomic bomb development and statistical mechanics. In 1953 she collaborated with Nicholas Metropolis, Marshall N. Rosenbluth, Augusta H. Teller, and Edward

Teller on the seminal paper “Equation of State Calculations by Fast Computing Machines” that introduced what is now known as the Metropolis method, and the birth of Markov chain Monte Carlo. She also developed the implementation of the algorithm for the MANIAC I hardware, making her the first person to ever implement the Markov chain Monte Carlo method.

Over the next few years Arianna and Marshall Rosenbluth applied the method to novel studies of statistical mechanical systems, including three-dimensional hard spheres and two-dimensional Lennard-Jones molecules and two and three-dimensional molecular chains. Although not widely known, these papers introduced Markov chain Monte Carlo heuristics that are still important today, including careful analysis of convergence by comparing multiple runs from different initial conditions.

After the birth of her first child, Arianna left professional research to focus on raising



Arianna Rosenbluth

her family, although she continued research and programming throughout her life, especially on problems in knot theory.

Early in her life Arianna was an accomplished fencer, winning not only the Texas women’s championship in foil but also the Houston men’s championship. Her plans to compete in the Olympics were prevented first by the cancellation of the 1944 Summer Olympics and then inability to fund participation in the 1948 summer games. She was an avid birdwatcher and reader, especially of science fiction novels.

Arianna is survived by her four children, five grandchildren, one step-grandchild, and two great-grandchildren. In lieu of flowers the family welcomes donations to the ASPCA, one of Arianna’s favorite charities.

Written by Michael Betancourt, Principal Research Scientist, Symplectomorphic, LLC



Elizabeth Meckes

OBITUARY: Elizabeth Meckes

1980–2020

IN 2019, ELIZABETH MECKES was elected a Fellow of the IMS. She won a Simons fellowship for the 2020–2021 academic year, so she, her husband Mark, and their two children Juliette and Peter, traveled to Oxford to spend the year visiting Jon Keating. Sadly, late in 2020 she was diagnosed with colon cancer and passed away a few weeks later, only six months after

her fortieth birthday. Even though she was young and MathSciNet lists only 27 papers, she left a considerable mathematical legacy.

Elizabeth received her PhD from Stanford in 2006, working with Persi Diaconis. Her thesis concerned an “*Infinitesimal version of Stein’s method*,” which she developed into a powerful tool for solving problems. Closely related to her

Continues on page 13

thesis is a paper with Sourav Chatterjee on a multivariate version of the method of exchangeable pairs, a method that had previously been applied only to univariate distributions but due to their work it has now become part of the standard toolbox. With 148 citations, according to Google Scholar, this is her most cited work. If you want to learn about exchangeable pairs there is a survey by Chatterjee, Diaconis, and Meckes in volume 2 of *Probability Surveys*.

After graduating from Stanford in 2006, she spent a year at Cornell supported by an AIM fellowship and working with Laurent Saloff-Coste. He remembered her as “a very able mathematician with talent for hard computation.” After the year at Cornell, she returned to her alma mater Case Western Reserve in 2007 with her husband Mark (he earned his bachelor’s degree in mathematics there in 1999, and his PhD there in 2003, co-advised by Stanislaw Szarek and Elisabeth Werner).

In 2007, Mark and Elizabeth wrote their first joint paper. It concerned normal approximations of linear functions of high-dimensional random vectors with symmetries. To quote *Math Reviews*, “The essential tool is Stein’s method of exchangeable pairs, which is used in this context for the first time. One of the advantages of Stein’s method is that it yields rather precise rates of convergence.”

In 2011, she wrote a ground-breaking paper with Matt Kahle on random simplicial complex. For a mental picture, think of a lot of triangles glued together along their edges. These objects are a multidimensional generalization of Erdős-Rényi random graphs and have a phase transition. The topology of these complexes is boring when the number of triangles is small or too large. However, in a narrow range of values the topology is quite complicated, when measured by their Betti numbers. Remarkably Kahle and Meckes were able to

prove a central limit theorem for the Betti numbers. The mathematics in this paper required a synthesis of ideas from algebraic topology, combinatorics, and geometric measure theory.

Elizabeth wrote a large number of interesting and important papers on random matrices, often in collaboration with her husband Mark. They introduced new ideas and tools for proving concentration inequalities for spectra of random matrices. One paper of theirs was published in the prestigious journal *Probability Theory and Related Fields*. Concerning that paper Elizabeth wrote on her web page. “I think of this paper as being unofficially dedicated to our children: Peter, who stubbornly refused to be born while most of the work in this paper was done; and Juliette, who told me one morning that it would make her happy if I proved a theorem that day (I’m pretty sure it was what became Theorem 3.5).”

An example of Elizabeth’s work that illustrates its breadth and depth is “Projections of Probability Distributions: A Measure-Theoretic Dvoretzky theorem” that was published in *Geometric Aspects of Functional Analysis*. This paper is an elegant piece of pure mathematics but is of fundamental importance in the foundations of data science. Specifically, her work on very low dimensional marginal of high dimensional probability measures are being used in compressive sensing.

In 2018 she and her husband Mark finished a textbook for a first rigorous course in Linear Algebra, which to quote her web page is imaginatively titled *Linear Algebra*. A reviewer writing in *MAA Reviews* said, “One outstanding feature of the book is the authors’ writing style, which is clear, conversational and humorous, while at the same time rigorous and informative. The level of sophistication of the text rises as the book progresses, but even at the end the

book is still quite readable and accessible.”

In the summer of 2019, Elizabeth published a book on *The Random Matrix Theory of the Classical Compact Groups*. To quote from the description on the Cambridge University Press website, “This is the first book to provide a comprehensive overview of foundational results and recent progress in the study of random matrices from the classical compact groups, drawing on the subject’s deep connections to geometry, analysis, algebra, physics, and statistics.” Jon Keating, whose group at Oxford she joined for a year said, “Her papers have opened up new avenues of research and her book was an extraordinary achievement.”

From this brief description of her research you can see that she worked on a wide variety of topics, being “most interested in situations in which probability arises naturally in other fields, e.g. differential geometry, convex geometry, and number theory.”

The next Southeastern Probability conference, to be held May 2021, will honor Elizabeth’s life and work. Eight of her collaborators and friends will speak. [See the announcement in the meetings section on page 16]. The bad news is that the conference will be virtual, but the good news is that because of this many people from across the country and beyond will be able to participate via Zoom.

The Spring 2021 Hausdorff Trimester on “The Interplay between High-Dimensional Probability and Geometry” has been dedicated to Elizabeth: <http://www.him.uni-bonn.de/programs/current-trimester-program/interplay-high-dimensional-geometry-probability-description/>. Their Winter School, which took place January 11–15, featured a talk by Persi Diaconis on Elizabeth’s work, a recording of which can be found on their website.

Written by Rick Durrett, Duke University

OBITUARY: S. James Taylor

1929–2020

JAMES TAYLOR died in Sevenoaks, Kent, on 22nd January 2020. He was born on 13th December, 1929 in Carrickfergus, N. Ireland, but spent most of the first decade of his life in Nigeria, where his parents were both missionary teachers. His family returned to Northern Ireland at the start of the Second World War, and James completed his high school education there.

James's first degree was a BSc in physics and mathematics at Queen's University, Belfast. He then went to Peterhouse, Cambridge, where he studied for a PhD in Pure Mathematics, supervised by A.S. Besicovitch. In 1952–53 he won a visiting fellowship to Princeton University, and began there his fruitful collaborations with probabilists in the USA.

He then held a postdoctoral position at Peterhouse in Cambridge, until he moved to his first tenure-track position at Birmingham in 1955. (C.A. Rogers, with whom James wrote several papers, was then Mason Professor of Mathematics at Birmingham.)

In 1962 he moved to Westfield College, London, where he stayed until 1975. During this time he hosted many visitors to London, in particular Sidney Port, Dick Gundy, and Mike Marcus. He then moved to a chair in Liverpool (1975–1983), and then, in 1984, he became Wyburn Professor of Mathematics at the University of Virginia. After his retirement from Virginia in 1996 he and his wife Maureen returned to England.

James could not remain long in a department without finding himself chosen as Head; he was a calm, balanced, and gifted administrator, and was able to combine administrative duties with mathematical research in a fashion that most of us can only envy. He handled difficulties with

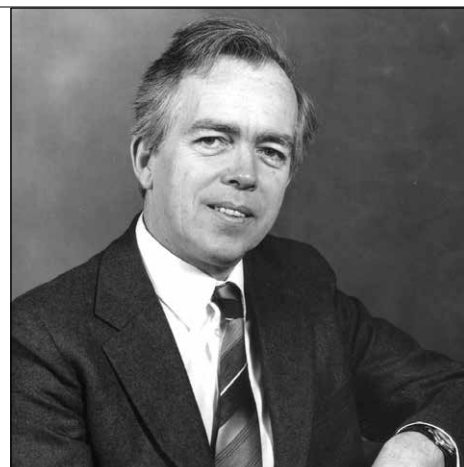
good humour, and never lost sight of the fact that the purpose of administration is to serve the academic goals of a University. He is particularly remembered at the University of Virginia for his work in the creation of the Statistics Department there.

James very much enjoyed travel and mathematical collaboration; he spent sabbatical years at Cornell, Michigan and UBC, and also made many shorter visits. When he could, he would interlace a year as a visitor between two permanent appointments— for example after leaving Liverpool, he spent a year at UBC before starting at Virginia.

James began working in analysis, but Besicovitch suggested the problem of studying the Hausdorff dimension of Brownian paths. James quickly learned the basics of Brownian motion, and his first paper in probability proved that the Hausdorff dimension of the Brownian path in \mathbb{R}^d (with $d \geq 2$) is 2. More delicate results followed; most notably, working with Zbigniew Ciesielski while they were both visitors at Cornell, James found the exact Hausdorff measure function for Brownian paths in dimensions 3 and higher.

In collaboration with probabilists in the strong mid-Western schools (Pruitt, Orey, Jain and Fristedt), James contributed much to the development of the theory of stable processes. With Bill Pruitt, he wrote two papers giving a very detailed account of the path structure of the asymmetric Cauchy process; this is the only stable process for which the asymmetry plays a significant role in the path properties. Their proof that the range of these processes is nowhere dense is a masterpiece of intricate sample path analysis.

In a fascinating paper with Orey, James initiated the study of exceptional points



James Taylor

of Brownian motion by looking at “fast points,” that is, points where the law of the iterated logarithm fails. Subsequent work by B. Davis, Perkins and others, has led to a very good understanding of the complementary sets of “slow points,” but our knowledge of the wilder fast points has advanced little.

With Claude Tricot, James developed “packing measure” and the associated “packing dimension”; informally, one may say that while Hausdorff dimension gives the smallest reasonable dimension associated with a set, packing dimension gives the largest. Working with Tricot, Le Gall, Perkins and others, James obtained exact packing measure results for the Brownian path, and the support of super-Brownian motion.

James was elected a Fellow of the IMS in 1986, and was an organiser of the Seminar on Stochastic Processes.

James was a generous and honourable man, an outcome of his life-long, deep and publicly avowed Christianity.

His discovery of the Trinity Presbyterian Church in Charlottesville, a church compatible with his zeal and missionary commitment, was an important factor in his decision to come to Virginia. His post-retirement travel had the twin goals of conducting mathematical research, and speaking to others about his Christian faith.

*Written by Martin Barlow,
University of British Columbia*

When experts go wrong...

Our Contributing Editor **Yoram Gat** responds to the article by Jeffrey Rosenthal in the previous issue (<https://imstat.org/2020/12/16/polls-damned-polls-and-statistics/>).

Yoram writes:

The January/February 2021 issue of the *Bulletin* carried a column by Professor Jeffrey Rosenthal about the inaccurate predictions of pollsters regarding the outcomes of the November US presidential elections. Some statisticians saw such erroneous predictions as a reason for shame, an embarrassment for the profession, Prof. Rosenthal wrote, but he sees them as exciting because they “provide compelling ways to teach our students the importance of statistical assumptions, as well as new opportunities to investigate innovative ways to overcome their limitations”.

Prof. Rosenthal’s sanguine attitude toward the persistent phenomenon of erroneous polling predictions is in my opinion quite worrisome. We are not concerned here with theoretical exercises or with laboratory experiments. Polling, for better or worse, is part of public life and its performance has implications for society. Presumably no one would profess excitement at repeated failures of, say, the electricity grid, even if such failures can be used in the instruction

of engineering students and can lead in the long term to useful improvements in the infrastructure.

To use a term that has gained some popularity in recent years, publicizing erroneous polling predictions must be thought of as the dissemination of fake news. Fake news, we are frequently told, is spread by extremists and by enemies without in order to undermine the trust citizens have in the institutions of our society. Disseminating misleading polling results does just that.

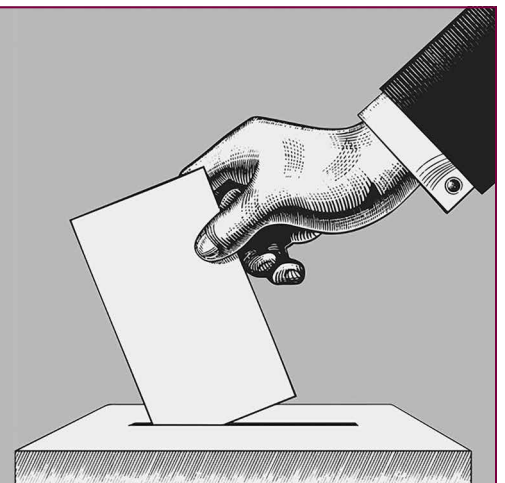
First of all, errors quite naturally reduce the credibility of those who have been proven wrong. The public really has little reason to put its faith in the reliability of those who repeatedly generate and publish wrong predictions. But more perilously, widely propagated false pronouncements by pollsters, like false pronouncements by experts in other areas of public life — economics, defense and public health come to mind — come to be perceived by the public (rightly or wrongly) as deliberate manipulation by the establishment.

Thus, errors in polling predictions are a matter for serious concern rather than for excitement. The response to errors should indeed be full recognition and thorough investigation, but instead of focusing on the hope that such investigation will lead at some point in the future to “overcoming the limitations” of existing statistical techniques, the immediate objective should be to make sure that published polling results clearly and appropriately reflect the limitations that exist. If and when new polling and statistical techniques are developed, purporting to produce more accurate results, those techniques should be tested rigorously before their results are offered to the public as being a reliable way to assess public opinion.

Public trust is a precious and scarce resource. Society without trust is a poor society. Statisticians and other experts who are given access to public attention should keep this in mind and act with the appropriate caution and humility.

Jeffrey Rosenthal responds:

Thanks for the feedback, Yoram. I certainly agree that published polling results should reflect their limitations. Perhaps they should include a warning similar to mutual fund statements that “Past performance is no guarantee of future results”. The public needs to understand that polls, like weather forecasts and Academy Award predictions, provide useful information but no certainties. Why? Because accurate polling is a very difficult challenge! And I see no need for statisticians to feel any shame or embarrassment about that.



IMS meetings around the world

Joint Statistical Meetings: 2021–2026

IMS sponsored meeting

JSM 2021

August 7–12, 2021. Seattle, USA.

[w https://ww2.amstat.org/meetings/jsm/2021/](https://ww2.amstat.org/meetings/jsm/2021/)

The theme of the 2021 JSM is “Statistics, Data, and the Stories They Tell.” Registration and housing open May 3, 2021. The early registration deadline is May 31. Propose a topic-contributed session for JSM 2021! Topic-contributed sessions are a great way to bring speakers together to present about a shared topic, so if you have a great idea for a JSM session, see <https://ww2.amstat.org/meetings/jsm/2021/submissions.cfm>. There is only room for a limited number of these sessions, so note the deadline for proposals is December 10.



Statistics, Data, and
the Stories They Tell
Washington State Convention Center
August 7–12, 2021

UPDATED

IMS sponsored meetings: JSM dates for 2022–2026

2022 Joint Statistical Meetings	IMS Annual Meeting @ JSM 2023	JSM 2024
August 6–11, 2022	August 5–10, 2023	August 3–8, 2024
Washington DC	Toronto, Canada	Portland, Oregon, USA

IMS Annual Meeting @ JSM 2025	JSM 2026
August 2–7, 2025	August 1–6, 2026
Nashville, TN, USA	Boston, MA, USA

Seminar on Stochastic Processes (SSP) 2021

March 17–20, 2021
Lehigh University, Bethlehem, PA, USA

POSTPONED

Seminar on Stochastic Processes (SSP) 2022

March 17–19, 2022

Lehigh University, Bethlehem, PA, USA

[w https://wordpress.lehigh.edu/ssp2021/](https://wordpress.lehigh.edu/ssp2021/)

The Seminar on Stochastic Processes (SSP) to be held at Lehigh University will be postponed by one year in response to the COVID-19 pandemic. The main SSP conference is now planned at Lehigh University on March 17–19, 2022 (speakers: Alexei Borodin, Jennifer Chayes, Tadahisa Funaki, Sarah Penington, Makiko Sasada), with the SSP Tutorial Lecture by Greg Lawler planned for March 18, 2022. Details forthcoming in 2021.

2021 Southeastern Probability Conference

NEW

Virtual conference, held in honor of Elizabeth Meckes

May 17–18, 2021, hosted by Duke University Math Department

[w https://services.math.duke.edu/~rtd/SEPC2021/SEPC2021.html](https://services.math.duke.edu/~rtd/SEPC2021/SEPC2021.html)

Speakers: Sourav Chatterjee (Stanford), Matt Kahle (Ohio State), Kay Kirkpatrick (Urbana), Jon Keating (Oxford), Mark Meckes (Case Western), Tai Melcher (Virginia), Sayan Mukherjee (Duke), and Kavita Ramanan (Brown). Talks will given over Zoom.

Registration details will be coming in March.

Supported by NSF grant DMS 2011385.

2022 IMS Annual Meeting

June 27–30, 2022, London, UK

w TBA

Mark your calendars for the 2022 IMS Annual Meeting. Held in London immediately before COLT, with extra workshop planned [*see announcement below*]. Program and Local Chair: Qiwei Yao.

2022 IMS–COLT Joint Workshop

July 1, 2022

London, UK

[w https://bguedj.github.io/colt-ims-2022.github.io/](https://bguedj.github.io/colt-ims-2022.github.io/)

The 2022 IMS Annual Meeting [*see announcement above*] will be immediately followed by the first IMS–COLT joint workshop, a one-day meeting in a hybrid format (on-site in central London, and online), linking the IMS and COLT communities of researchers. (COLT is the annual Conference on Learning Theory, and will take place in 2022 immediately after this IMS–COLT workshop day.)
Committee: Benjamin Guedj (chair), Peter Grünwald, Susan Murphy.

At a glance:

*forthcoming
IMS Annual
Meeting and
JSM dates*

2021

IMS Annual Meeting @ JSM: Seattle, August 7–12, 2021

2022

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

JSM: Washington DC, August 6–11, 2022

2023

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

2024

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

JSM: Portland, OR, August 3–8, 2024

2025

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

More IMS meetings around the world

These IMS sponsored or co-sponsored meetings are rearranged. Please check for updates.

AWAITING NEW DATES:

7th Bayes, Fiducial and Frequentist Statistics Conference (BFF7)

<http://www.fields.utoronto.ca/activities/20-21/BFF7>

WNAR/IMS/KISS/JR Annual Meeting

<http://www.wnar.org/>

8th Workshop on Biostatistics and Bioinformatics

<https://math.gsu.edu/yichuan/2020Workshop/>

REARRANGED:

Frontier Probability Days

May 16–18, 2021, Las Vegas, Nevada

[w http://lechen.faculty.unlv.edu/FPD20/](http://lechen.faculty.unlv.edu/FPD20/)
Registration open until March 16, 2021.

Mathematical Statistics and Learning June 1–4, 2021, Barcelona, Spain.

[w http://www.msl2020.org/](http://www.msl2020.org/)

Statistics in the Big Data Era

June 2–4, 2021, UC Berkeley, CA, USA

[w https://simons.berkeley.edu/workshops/statistics-big-data-era](https://simons.berkeley.edu/workshops/statistics-big-data-era)

Bernoulli–IMS World Congress 2020

July 19–23, 2021, Seoul, South Korea

[w https://www.wc2020.org/](https://www.wc2020.org/)

IMS Asia Pacific Rim Meeting 2022

January 4–7, 2022, Melbourne, Australia

[w http://ims-aprm2021.com/](http://ims-aprm2021.com/)

IMS sponsored meeting

Bernoulli–IMS 11th World Congress in Probability and Statistics and 2024 IMS Annual Meeting August 12–16, 2024, Ruhr-University Bochum, Germany

[w TBC](#)

One World ABC Seminar: Ongoing and online

[w https://warwick.ac.uk/fac/sci/statistics/news/upcoming-seminars/abcworldseminar](https://warwick.ac.uk/fac/sci/statistics/news/upcoming-seminars/abcworldseminar)
Inspired by the “One World Probability Seminar”, in April 2020 we decided to run the One World Approximate Bayesian Computation (ABC) Seminar, a fortnightly series of seminars that will take place via Zoom on Thursdays at 11.30am [UK time]. The idea is to gather members and disseminate results and innovation during these weeks and months under lockdown. Register to receive the webinar link via email. So if you are interested in the ABC world seminar and would like to hear from us fortnightly about the announced speaker, title and abstract and, most importantly, be able to join the talk, please register at the website above.

The organizers are welcoming proposals for future talks. This webinar is part of the larger One World seminar initiative, which gathers seminars in applied mathematics and data sciences. [See below for *One World Probability Seminar*]

One World Probability Seminar (OWPS): Ongoing and online

[w https://www.owprobability.org/](https://www.owprobability.org/)

The short-term goal of the One World Probability Seminar is to provide access to a seminar for as many researchers as possible. For the indefinite future, the seminar is intended to foster ideas among our truly global research community and to help reduce our impact on climate change. Initially, the seminar will have an experimental character. We will need to understand how to work with online tools and learn how to deal with the vulnerabilities and bottlenecks of online traffic. Please join us in the long journey ahead!



IMS sponsored meeting

March 14–17, 2021: [Houston, TX, USA](https://www.enar.org/meetings/spring2021/)

[w www.enar.org/meetings/spring2021/](https://www.enar.org/meetings/spring2021/)
Now in virtual format! Registration is now open at <https://www.enarspring.org/> for the ENAR 2021 Spring Meeting. The program offers more than 500 presentations by invited, contributed and poster presenters, on topics such as COVID-19, equity research, causal inference, statistical genetics and spatial/temporal modeling.

2022 ENAR meeting:

March 27–30, 2022. Houston, TX, USA

ABC in Svalbard

April 12–13, 2021, Svalbard, Norway

[w https://sites.google.com/view/abcinsvalbard/home](https://sites.google.com/view/abcinsvalbard/home)

Registration is open, and limited to 100 participants so book soon! ABC in Svalbard aims to attract researchers at the forefront of research on approximate Bayesian computing methods, and promote original research in that field among various disciplines.

As the meeting is limited in size and located in a remote area of the world, **mirror meetings will take place in Brisbane and Grenoble**, towards gathering participants unable or unwilling to travel to Longyearbyen. They will include live talks by local speakers, live interaction with the happy few in Longyearbyen (time zone permitting), and further discussions of the remote talks. Any volunteer interested in setting up another mirror meeting should contact one of the organizers.

Employment Opportunities around the world

China: Beijing

Chinese Academy of Sciences

Academy of Mathematics and Systems Science, Chinese Academy of Sciences Tenured and Tenure-track Positions

http://jobs.imstat.org/c/job.cfm?site_id=1847&jb=55646957

Spain: Barcelona

Universitat Pompeu Fabra, Department of Economics and Business

Tenure Track Assistant Professor

http://jobs.imstat.org/c/job.cfm?site_id=1847&jb=55434202

United Kingdom: Coventry

University of Warwick

Professor of Probability or Reader in Probability

http://jobs.imstat.org/c/job.cfm?site_id=1847&jb=55647253

United Kingdom: Coventry

University of Warwick

Professor of Data Science/Statistics

http://jobs.imstat.org/c/job.cfm?site_id=1847&jb=55647246

United Kingdom: Glasgow

The University of Glasgow

Lecturer / Senior Lecturer / Reader in Statistics & Data Analytics

http://jobs.imstat.org/c/job.cfm?site_id=1847&jb=55381427

United States: Tempe, AZ

Arizona State University

Clinical Assistant Professor of Data Science

http://jobs.imstat.org/c/job.cfm?site_id=1847&jb=55354491

United States: Phoenix, AZ

Arizona State University

Lecturer, Biostatistics

http://jobs.imstat.org/c/job.cfm?site_id=1847&jb=55479645

United States: Phoenix, AZ

Arizona State University

Assistant/Associate/Full Professor - Biostatistics

http://jobs.imstat.org/c/job.cfm?site_id=1847&jb=55563487

United States: La Jolla, CA

University of California San Diego

Assistant Teaching Professor

http://jobs.imstat.org/c/job.cfm?site_id=1847&jb=55439450

United States: La Jolla, CA

University of California San Diego

Stefan E. Warschawski Visiting Assistant Professor

http://jobs.imstat.org/c/job.cfm?site_id=1847&jb=55449187

United States: Los Angeles, California

University of California, Los Angeles

Tenure-Track Assistant Professor, Black Health and Big Data Methodology, UCLA

http://jobs.imstat.org/c/job.cfm?site_id=1847&jb=55752005

United States: Golden, CO

Colorado School of Mines

Department of Applied Mathematics and Statistics - Teaching Assistant Professor

http://jobs.imstat.org/c/job.cfm?site_id=1847&jb=55647502

United States: Storrs, CT

University of Connecticut

Postdoctoral Research Associate

http://jobs.imstat.org/c/job.cfm?site_id=1847&jb=55541207

United States: Orlando, FL

Florida Virtual School

Flex Statistics Instructor Florida Certified

http://jobs.imstat.org/c/job.cfm?site_id=1847&jb=55402813

United States: Athens, GA

University of Georgia, Department of Statistics

Lecturer

http://jobs.imstat.org/c/job.cfm?site_id=1847&jb=55439350

United States: Athens, GA

University of Georgia, Department of Statistics

Assistant Professor

http://jobs.imstat.org/c/job.cfm?site_id=1847&jb=55439343

United States: Champaign, IL

University of Illinois at Urbana-Champaign, Department of Statistics

Visiting Assistant Professors

http://jobs.imstat.org/c/job.cfm?site_id=1847&jb=55439792

United States: Bloomington, IN**Indiana University-Bloomington, School of Public Health**

Post Doctoral Fellow or Research Associate

http://jobs.imstat.org/c/job.cfm?site_id=1847&jb=55706018**United States: Rockville, MD****IMS, Inc.**

Statistician/Programmer

http://jobs.imstat.org/c/job.cfm?site_id=1847&jb=55725655**United States: Rolla, MO****Missouri University of Science and Technology**Fred and June Kummer Endowed Department Chair of
Mathematics and Statisticshttp://jobs.imstat.org/c/job.cfm?site_id=1847&jb=55244433**United States: Saint Louis, MO****Washington University in Saint Louis**

Professor of Statistics and Data Science

http://jobs.imstat.org/c/job.cfm?site_id=1847&jb=55806832**United States: Omaha, NE****Creighton University Math Department**

Assistant Professor

http://jobs.imstat.org/c/job.cfm?site_id=1847&jb=55628669**United States: Cleveland, OH****Cleveland State University**Assistant Professor in Applied Statistics, Data Analytics, or
Biostatisticshttp://jobs.imstat.org/c/job.cfm?site_id=1847&jb=55571187**United States: Philadelphia, PA****University of Pennsylvania, Wharton Department of Statistics**

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http://jobs.imstat.org/c/job.cfm?site_id=1847&jb=55571133**United States: Logan, UT****Utah State University**

Assistant Professor in Data Science/Statistics

http://jobs.imstat.org/c/job.cfm?site_id=1847&jb=55363593**United States: Madison, WI****University of Wisconsin-Madison**Assistant Professor, Associate Professor, or Professor in Statistics -
Cluster Hirehttp://jobs.imstat.org/c/job.cfm?site_id=1847&jb=55354631**Papers on COVID-19: UPDATED Call for Submissions**

In response to the COVID-19 pandemic, *The Canadian Journal of Statistics* (CJS) is encouraging submissions on statistical methods and theory, with applications to aspects of COVID-19. This includes research on the design and analysis of COVID-19 studies and databases, and challenges posed by COVID-19 data.

We invite the submission of research articles, reviews, or focussed discussions on a broad range of topics, including the design and analysis of specific types of studies, the analysis of disease surveillance data, and statistical issues related to demographic, epidemiological and genetic studies of the disease, and to the impact of the pandemic on public health and the economy. In addition to novel statistical ideas, submissions should contain insightful analysis of some aspect of COVID-19. Papers that arise from collaborations with public health researchers and other scientists are especially encouraged.




We had originally called for submissions before December 31, 2020, with a view to a special issue on COVID-19. Given the time needed for studies to reach maturity and statistical ideas to be developed, we are modifying these plans. **Papers may be submitted for the foreseeable future**, and, as papers are accepted, CJS plans to highlight submissions in special sections on COVID-19 in subsequent issues. A speedy review will be given to submissions on COVID-19, according to the usual CJS criteria.

Please submit your paper through the CJS submission website, specifying that the submission is for the special “*COVID-19 Section*”: <http://mc.manuscriptcentral.com/cjs-wiley>

The lead Guest Editor for papers on COVID-19 is Jerry Lawless (University of Waterloo), and co-Guest Editors are Don Estep (Simon Fraser University), Nancy Heckman (University of British Columbia), Eleanor Pullenayegum (University of Toronto), Lei Sun (University of Toronto) and Denis Talbot (Université Laval).



International Calendar of Statistical Events



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

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

Online and Ongoing



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



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

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

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

March 2021

  March 14–17: Online Baltimore, MD, USA. ENAR Spring Meeting **w** <https://www.enar.org/meetings/spring2021/>

  was to be held March 17–20, 2020; now March 17–19, 2022: Bethlehem, PA, USA. Seminar on Stochastic Processes (SSP) **w** <https://wordpress.lehigh.edu/ssp2021/>

April 2021




 April 12–13: Svalbard, Norway [also mirror meetings in Brisbane, Coventry, Paris]. ABC in Svalbard **w** <https://sites.google.com/view/abcinsvalbard/home>

April 22–23: Birmingham, UK. 3rd IMA and OR Society Conference on Mathematics of Operational Research **w** <https://ima.org.uk/14347/14347/>

April 25–27: Gainesville, FL, USA. Conference on Applied Statistics in Agriculture and Natural Resources **w** <https://conference.ifas.ufl.edu/applied-stats/>

May 2021

 May 16–18: Las Vegas, USA. Frontier Probability Days **w** <http://lechen.faculty.unlv.edu/FPD20/>

   May 17–18: Virtual format. Southeastern Probability Conference held in honor of Elizabeth Meckes **w** <https://services.math.duke.edu/~rtd/SEPC2021/SEPC2021.html>

May 20–23: Chicago, USA. IISA 2021 Summer Conference **w** <https://www.intindstat.org/summerConference2021/>

June 2021

 June (dates TBA): Anchorage, Alaska, USA. WNAR/IMS/JR Meeting **w** <https://www.wnar.org/page-18098>

 June 1–4: Barcelona, Spain. Mathematical Statistics and Learning **w** <https://www.msl2020.org>

 June 2–4: Berkeley, CA, USA. Statistics in the Big Data Era **w** <https://simons.berkeley.edu/workshops/statistics-big-data-era>



Have **YOU** spotted
a meeting that's missing or
listed incorrectly? *Please tell us!*
Email bulletin@imstat.org.

June 14–17: New Orleans, USA. Sixth International Conference on Establishment Statistics (ICES VI) **w** <https://ww2.amstat.org/meetings/ices/2021/index.cfm>

June 14–18: Paphos, Cyprus. International Symposium on Nonparametric Statistics 2020 **w** <http://cyprusconferences.org/isnps2021/>

June 20–26: Portoroz, Slovenia. 8th European Congress of Mathematics **w** <http://www.8ecm.si/>

June 28–July 2: Kunming, China. ISBA 2021: World Meeting of the International Society for Bayesian Analysis **w** <https://bayesian.org/isba2020-home/>

June 28–July 2: Edinburgh, UK. Extreme Value Analysis **w** <https://www.maths.ed.ac.uk/school-of-mathematics/eva-2021>

June 28–July 2: Nový Smokovec, Slovakia. LinStat 2021 **w** <https://linstat2020.science.upjs.sk/>

June 29–July 1: Nottingham, UK. MIMAR (11th Modelling in Industrial Maintenance and Reliability) **w** <https://ima.org.uk/12183/11th-ima-international-conference-on-modelling-in-industrial-maintenance-and-reliability-mimar/>

July 2021

ONLINE July 11–16: NOW ONLINE. 63rd ISI World Statistics Congress 2021 **w** <http://www.isi2021.org/>

July 5–9: Gold Coast, QLD, Australia. 2020 Australian and New Zealand Statistical Conference **w** <https://anzsc2020.com.au>

July 15–18: Montreal, Canada. Statistics 2021 Canada **w** <https://www.concordia.ca/artsci/events/statistics-2021.html>

 July 19–23 (postponed from 2020): Seoul, South Korea. Bernoulli–IMS World Congress **w** <https://www.wc2020.org/>

August 2021

August 5–7: Prague, Czech Republic. 3rd International Conference on Statistics: Theory and Applications (ICSTA'21) **w** <https://2021.icsta.net/>

Meeting organizers: to get a FREE LISTING


in this calendar, please submit the details (as early as possible) at

<https://www.imstat.org/ims-meeting-form/>

Or you can email the details to Elyse Gustafson at erg@imstat.org
We'll list them here in the Bulletin, and on the IMS website too, at [imstat.org/meetings-calendar/](https://www.imstat.org/meetings-calendar/)

 August 7–12: Seattle, WA, USA. IMS Annual Meeting at JSM 2021 **w** <https://ww2.amstat.org/meetings/jsm/2021/>

September 2021

NEW  September 6–9: Manchester, UK. RSS 2021 International Conference **w** <https://rss.org.uk/training-events/conference2021/>


September 8–9: Cambridge, UK. Induction Course for New Lecturers in the Mathematical Sciences **w** <https://ima.org.uk/13572/induction-course-for-new-lecturers-in-the-mathematical-sciences-2021/>

September 19–22: Ribno (Bled), Slovenia. Applied Statistics 2020 (AS2020) **w** <http://conferences.nib.si/AS2020>

January 2022

 January 4–7 (postponed from January 2021): Melbourne, Australia. IMS Asia Pacific Rim Meeting (IMS-APRM2021) **w** <http://ims-aprm2021.com/>

March 2022

NEW  March 17–19 (postponed from March 2021): Bethlehem, PA, USA. Seminar on Stochastic Processes (SSP) **w** <https://wordpress.lehigh.edu/ssp2021/>

International Calendar *continued*

March 2022 continued

 March 27–30: Houston, TX, USA. ENAR Spring Meeting
w <http://www.enar.org/meetings/future.cfm>

May 2022

May 12–18: Erice, Italy. 7th Workshop on Stochastic Methods in Game Theory w <https://sites.google.com/view/erice-smgt2020/the-workshop>

June 2022

 June 27–30: London, UK. IMS Annual Meeting w TBC

June 27–July 1: Darwin, Australia. Joint Southern Statistical Meetings 2022 (JSSM2022) w <https://statsoc.org.au/event-3529236>

July 2022

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

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

July 18–22: Moscow, Russia. European Meeting of Statisticians
w <https://ems2022.org/>

August 2022

 August 6–11: Washington DC, USA. JSM 2022
w <http://www.amstat.org/ASA/Meetings/Joint-Statistical-Meetings.aspx>

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

July 2023

July 15–20: Ottawa, Canada. 64th ISI World Statistics Congress
w TBC

August 2023


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

August 2024

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

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

August 2025

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

August 2026

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

Are we missing something? If you know of any statistics or probability meetings which aren't listed here, please let us know.

You can email the details to Elyse Gustafson at ims@imstat.org, or you can submit the details yourself at <https://www.imstat.org/ims-meeting-form/>

We'll list them here in the Bulletin, and on the IMS website too, at imstat.org/meetings-calendar/



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Journals

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

Individual Memberships

Each individual member receives the *IMS Bulletin* (print and/or electronic) and may elect to receive one or more of the five scientific journals. Members pay annual dues of \$105. An additional \$110 is added to the dues of members for each scientific journal selected (\$70 for *Stat Sci*). **Reduced membership dues** are available to full-time students, new graduates, permanent residents of countries designated by the IMS Council, and retired members.

Individual and General Subscriptions

Subscriptions are available on a calendar-year basis. **Individual subscriptions** are for the personal use of the subscriber and must be in the name of, paid directly by, and mailed to an individual. Individual subscriptions for 2021 are available to *The Annals of Applied Probability* (\$225), *The Annals of Applied Statistics* (\$225), *The Annals of Probability* (\$225), *The Annals of Statistics* (\$225), *Statistical Science* (\$185), and *IMS Bulletin* (\$115). **General subscriptions** are for libraries, institutions, and any multiple-readership use. Institutional subscriptions for 2021 are available to *The Annals of Applied Probability*, *The Annals of Applied Statistics*, *The Annals of Probability*, and *The Annals of Statistics* (each title \$525 online only / \$618 print+online), *Statistical Science* (\$301/\$352), and *IMS Bulletin* (\$146 print). Airmail delivery is no longer offered.

IMS Bulletin

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

The *IMS Bulletin* (ISSN 1544-1881) is published eight times per year, in January/February, March, April/May, June/July, August, September, October/November and December, by the Institute of Mathematical Statistics, 9760 Smith Rd, Waite Hill, Ohio 44094, USA. Periodicals postage paid at Cleveland, Ohio, and at additional mailing offices. Postmaster: Send address changes to 9760 Smith Rd, Waite Hill, Ohio 44094, USA or dues.subs@imstat.org. Copyright © 2021 by the Institute of Mathematical Statistics. Printed by The Sheridan Press, 450 Fame Avenue, Hanover, PA 17331, USA.

Information for Advertisers

General information: The *IMS Bulletin* and webpages are the official news organs of the Institute of Mathematical Statistics. The *IMS Bulletin*, established in 1972, is published 8 times per year. Print circulation is around 3,500 paper copies, and it is also free online in PDF format at <https://www.imstat.org/ims-bulletin-archive/>, posted online about two weeks before mailout (average downloads over 8,000). Subscription to the *IMS Bulletin* costs \$115; call 877-557-4674 (US toll-free) or +1 216 295 2340 (international), or email dues.subs@imstat.org. The IMS website, <https://imstat.org>, established in 1996, receives over 30,000 visits per month.

Advertising job vacancies

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

Advertising meetings, workshops and conferences

Meeting announcements here and on the IMS website at <https://imstat.org/meetings-calendar/> are free. Submit your meeting details at <https://www.imstat.org/ims-meeting-form/>

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Display advertising allows for placement of camera-ready ads for journals, books, software, etc. A camera-ready ad should be sent as a grayscale PDF/EPS (min. 300dpi) with all fonts embedded. Email your advert to Audrey Weiss, IMS Advertising Coordinator admin@imstat.org or see <https://imstat.org/advertise>

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Full page (within usual <i>Bulletin</i> margins)	7.5" wide x 9.42" high (190 mm x 239 mm)	\$480

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

the
next
issue is
April/May
2021

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



DEADLINES
for
submissions
March 15, then
May 1

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The purpose of the Institute is to foster the development and dissemination of the theory and applications of statistics and probability

IMS: Organized September 12, 1935

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INSTITUTE OF MATHEMATICAL STATISTICS

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