



International Astrostatistics Association

IAA Newsletter – November 2015

01 November, 2015

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Message from IAA President

I hope that this Newsletter finds you all in good health, and being engaged in interesting collaborative astrostatistical --- or ‘astroinformatical’ --- projects. I should mention to newer IAA members that with respect to the association name, *International Astrostatistics Association*, that “astrostatistics” is meant to incorporate “astroinformatics”. We do not mean to denigrate astroinformatics as being less important than astrostatistics,, but rather it was just easier to write and say “Astrostatistics” instead of “Astrostatistics & Astroinformatics”, or “Astroinformatics & Astrostatistics”. Please understand that we serve both disciplines.

This past summer and early Fall has been very active for astrostatisticians and the IAA in general. We organized two special topic sessions in astrostatistics at the ISI World Statistics Congress in Rio de Janeiro, Brazil, in late July, followed by co-sponsoring the first ever *IAU Commission on Astroinformatics & Astrostatistics* event, convened on the first three days of the IAU General Assembly held in Honolulu, Hawaii from 3-14 August, 2015. More specifically, we co-sponsored Focus Meeting 8 on Statistics and Exoplanets, held from 3-5 August. Attendees were pleased with the report given at the conclusion of the 3-day meeting that our session had more participants attending than any other Focus Meeting. In other words, the session was a thorough success and provided evidence that astrostatistics/astroinformatics is gaining in interest among astrophysicists throughout the world. Eric Feigelson, an original member of the IAA Council and co-editor of the ASAIP (Portal), was selected by the IAU as initial President of the new Commission.

The Joint Statistical Meetings of the American Statistical Association, commonly referred to as simply JSM, was held in Seattle, WA starting during the second week of the IAU General Assembly. Members of the ASA astrostatistics interest group held two special theme sessions on astrostatistics, both of which were successful.

From 11-16 October, 2015, the second session of the School of Statistics for Astrophysics was held in Les Houches, France under the direction of Didier Fraix-Burnet and Stéphane Girard. The session was devoted to training astronomers in the use of a large range of statistical and algorithmic

approaches to clustering and classification analysis. Statistical spatial cluster analysis and associated graphical methods of presentation were foremost interests of the session.

During mid-October the second IAA Cosmostatistics Initiative (COIN) Workshop was held on the Isle of Wight, off the UK coast. The workshop was held in a large rented house where most workshop participants stayed, ate, slept and worked on various cosmological projects of their choosing. Each project consisted of members from the astronomical and statistical communities, and will result in published papers. The projects of the first session held in Portugal last year were published in *Astronomy and Computing* and *Monthly Notices of the Royal Astronomical Society*. (MNRAS). COIN projects may be viewed at: <http://cointoolbox.github.io>. I participated in the Workshop via Skype, and worked on study manuscripts using *overleaf* facilities (<https://www.overleaf.com>). Rafael de Souza and Emille Ishida headed the Workshop, with Alan Heavens of Imperial College assisting with generous funding grants to pay for housing and incidentals. Some travel funds were also available.

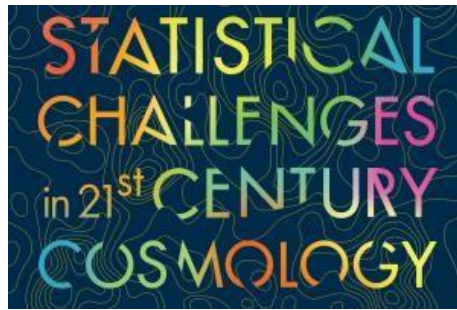
The COIN workshops very much fulfill the goals of the IAA, in promoting collaboration between astronomers and statisticians and fostering better research methodologies.

This past 19-22 May, 2015, IAA members Jamie Riggs (Northwestern Univ) , Brian Weaver (Los Alamos National Laboratory) and myself were invited (with conference fees waived) to participate at the “Workshop on Issues in Crater Studies and the Dating of Planetary Surfaces”, held the Johns Hopkins University Applied Physics Laboratory, Laurel, MD. There is definite interest among planetary scientist interested in crater studies in obtaining statistical support for their studies. Jamie Riggs is now heading a new COIN-like section on IAA Planetary Science studies, and plans on holding an initial workshop on the subject this coming year. All members (and others) who are interested in planetary science (not necessarily crater studies) should contact Jamie and help get a section started. Contact Jamie.riggs@northwestern.edu.

If anyone has a plan, or is even thinking about starting a project or workshops section, please contact me hilbe@asu.edu. The COIN project in cosmology has demonstrated that these types of workshops can really work, and promote useful studies and collaboration.

There are two additional items I wish to draw your attention to:

- 1) A second announcement of COSMO21, tpobe held on the island of Crete next May
- 2) Nominations for IAA Council members (2016-2017) and officers.



COSMO21
24-27 May, 2016
Chania, Crete (Greece)
<http://cosmo21.cosmostat.org/>

The emphasis of the conference is on advances and methodological challenges in cosmology, and new results derived from advanced data analysis and modeling methods. Cosmology is entering a new area which will require processing of huge data sets, and measurements at the sub-percent level of accuracy in order to answer fundamental cosmological questions such as the nature of dark matter, dark energy and gravity. As ever, statistics will inevitably play a fundamental role in understanding the new generation of data, but with additional challenges of ever-increasing datasets and large parameter spaces.

Topics

- Cosmic microwave background: non-Gaussianity, component separation methods.
- Weak lensing: galaxy shape measurements, projected mass density map reconstruction, three-dimensional mapping of the dark matter, high order statistics, Euclid, LSST. □ Large-scale structure □ High redshift supernovae.
- Mapping high- z 21-cm radiation
- Lyman-alpha forest
- Astronomical discovery from overwhelmingly large datasets: BOSS, EUCLID, PAU, LAMOST, LOFAR, SKA, LSST and others.
- Statistical methods used in astronomical data analysis (including new developments coming from fertile cross-interactions in astrostatistics). A preliminary list of these methods is included below:
 - Bayesian methods, evidence, model selection. ▪ Multivariate classification and clustering.
 - Sparsity: wavelets, compressive sampling, 2D and 3D data representations.
 - Machine learning for large multivariate datasets: Kernel regression, Support Vector Machine, neural networks, supervised learning.

There will be several sessions during the conference. Each session will have at least one keynote speaker, and half of the talks will be contributed talks. The cross-disciplinary nature of the

symposium is reflected in the inclusion of speakers from the statistics community in the suggested list. Conference Registration and Abstract submission opens: 1 January, 2016

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Alan Heavens: a.heavens@imperial.ac.uk Imperial College, London, UK

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Bruce Bassett	University of Cape Town, South Africa	
Vassilis Chamandans	National Observatory of Athens & University of Crete, Greece	
Eric Feigelson	Pennsylvania State University, USA	
Alan Heavens	Imperial College London, UK	
Joseph Hilbe	Arizona State University, USA	
Alberto Krone-Martins	Lisbon University, Portugal	
Rachel Mandelbaum	Carnegie Mellon University, USA	
Hyranya Peiris	University College London, UK	
Anais Rassat	Ecole Polytechnique Federale Laussane, Switzerland	
Jean-luc Starck	Commissariat à l’Energie Atomique, France	
Panagiotis Tsakalides	University of Crete & FORTH/ICS ,Greece	Chair, LOS
Yanxia Zhang	National Astronomical Observatory, China	

NOMINATIONS OF IAA COUNCIL MEMBERS

I invite all members of the IAA membership to nominate members to serve on the 2016-2017 IAA Council. I also invite you to nominate officers of the Association as well. My term as President expires at the end of 31 December, 2016. Please send me your nominations and I will forward them to a nominations committee we are forming. I urge you to submit your nominations to me by Sunday, 15 November – in 2 weeks.

The nominations committee may be selecting other recognition awards, to be determined by the committee. With respect to officers, we have 5 officers – a President and 4 Vice Presidents. We currently have 17 Council members. The President chairs the Council. You may nominate yourself for a position as well. Council members may at this time retain their position, but must be nominated. Depending on results of nominations, we may have elections in early December. Current officers and Council members are listed on the next page.

I also invite you to volunteer to lead or serve on any of the following committees:

nominations committee:

awards committee:

finance committee:

membership committee:

Another committee of your suggestion:

International Astrostatistics Association

Officers and Council members

<through 2015>

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