OUT AND ABOUT

Lab Director Bob Curry spent July in Northern Thailand eating insects and assisting with the Physical Geography Field School conducted by the National University of Singapore. Bob gave lectures on significant figures, basic error analysis, the use of spreadsheets in scientific calculations, and other tedious but useful topics.

Prof. Steve Hawley gave a presentation on “Potentially Hazardous Objects” at the Aerospace Engineering Department colloquium on Sept. 27 and a presentation on Leadership to the KU NROTC Midshipmen on October 30. He also served as the keynote speaker at the Salina Business Hall of Fame ceremony on October 31. Prof. Hawley received a request to meet with the Chief of Naval Operations Strategic Studies Group, which functions as the operational research and concept generation center for the Navy. The SSG visited the Department on November 4 and, in addition to interviewing Prof. Hawley, received a Department research overview from Prof. Feldman and a description of the Department’s participation in the LHC/CMS collaboration from Prof. Baringer. Prof. Hawley was selected by Sen. Jerry Moran to serve on the Service Academy Nominating Committee. The Committee reviewed roughly 100 applicants from Kansas students requesting an appointment the Naval Academy, the Air Force Academy, or West Point.

Prof. Kong visited Fermilab during the summer and gave a theory seminar, "Next-to-Minimal Universal Extra Dimensions". Kong also gave a plenary talk on "Dark Matter at the LHC" at Particle Physics and Cosmology Workshop, South Dakota.

The American Physical Society Prairie Section Fall Meeting was held on November 7-9, 2013 and hosted by the University of Missouri in Columbia, MO. At this meeting graduate student Sarah LeGresley gave a talk entitled "A physics approach to the repositioning of DNA damage." This talk outlined a model that uses the partition function to show that the breathing of DNA caused migration of the damage. This migration allows the damage to be moved to places that are more likely to be found by repair proteins. Wade Rush gave a talk entitled "Channeling radiation from a 4 MeV electron
beam interaction with a diamond crystal”. This talk outlined the physics and the expected energy spectrum that will result from a 4 MeV beam colliding with a cubic diamond lattice crystal with a (111) orientation.

**Prof Melott** attended the meeting of the *Geological Society of America* in Denver, and spoke October 27 on “Periodicities in Biodiversity and Possible Causal Factors”. **Prof. Melott** also presented a Sunday lecture Sept 29 at the *Unitarian Fellowship of Lawrence*: “Death from the Skies: Astrophysical Hazards to Life on Earth.” And, there was a KU press release on his recently-published work with **Drew Overholt**: [http://news.ku.edu/2013/09/05/researcher-looks-comet-potential-trigger-big-freeze](http://news.ku.edu/2013/09/05/researcher-looks-comet-potential-trigger-big-freeze)

*Color Glass Condensate* is not a performance art ensemble, nor a stained glass studio: **Professor Murray** visited Rio de Janeiro in August to work with Prof Magdalena Malek at the *UERJ*. Profs Murray and Malek work together on the heavy ion program of the CMS experiment at the Large Hadron Collider. In September Prof Malek returned the favor and visited Lawrence. She is working very closely with KU graduate student Pat Kenny on understanding photon-nuclear collisions at very high energy. The goal of this work is to study the gluons that hold a nucleus together. It has been speculated that at very high energy the gluons in a nucleus may condense to form a glass like structure called the Color Glass Condensate. Photons are ideal studying this system since they penetrate deep into the nucleus. This analysis relies heavily on the Zero Degree Calorimeters that were built at KU for the CMS experiment in Geneva.

Two theory students, **Maulik Nariya** and **Gopolang Mohlabeng**, attended summer schools at *IAS and SLAC*. Gopolang also visited *Fermilab* for collaborative work last summer.

**Prof. Gregory Rudnick** gave colloquia on “The Transformation of Galaxies in Dense Environments over Cosmic Time” at the *University of Missouri, Columbia and Tufts University*.

A proposal by Professors **S. Shandarin** (Chair) and R. van de Weygaert (co-Chair) from *Kapteyn Astronomical Institute* at The University of Groningen, The Netherlands to the *International Astronomical Union* for an IAU Symposium on "The Zel'dovich Universe: Genesis and Growth of the Cosmic Web" has been approved. The symposium IAUS 308 will be held in Tallinn Estonia during June 23 - 28, 2014.

In mid September, graduate student **Wade Rush** traveled to *FermiLab* and participated in A0’s electron beam channeling experiment. FermiLab is attempting to create soft X-Ray channeling radiation from a 4 MeV electron beam’s interaction with a diamond crystal. The A0 experiment collaboration is made up FermiLab’s A0 Experimental and Theoretical Acceleration Sections, Northern Illinois Center for Accelerator & Detector Development, the Vanderbilt University Physics Department and the University of
Kansas Physics Department. Wade’s contribution in this ongoing experiment is to simulate the channeling radiation spectrum and possibly background coherent Bremsstrahlung spectrum.

AWARDS

Professor Siyuan Han received the Olin Petefish Award in Basic Science this October.

Professor Melott was named “Mentor of the Month” for September 2013 by the KU Center for Undergraduate Research.

Graduate student Jenny Nielsen was awarded a Special Commendation Prize and a $1000 award by the Foundational Questions Institute for her essay “Is Bit It?”.

Graduate student Jessica Stockham was recently selected as an awardee of the Dr. Pliny A. and Margaret H. Price Prize in Cosmology and AstroParticle Physics by the Ohio State University Center for Cosmology and AstroParticle Physics. As part of the award, she’s invited to visit the campus to give a seminar about the work she’s been doing and receive an honorarium of $1500.

RECENT PUBLICATIONS


**ALUMNI NEWS**

**Prof. Shahid Hussain** (Ph.D. 2005) joined the faculty of *Karakorum International University*, Gilgit, Pakistan as Associate Professor, where he will be part of a team building an astronomy and astrophysics research observatory.

**Professors Drew Overholt** (Ph.D. 2013) and **Brian Thomas** (Ph.D. 2005) attended the annual meeting of the *Geological Society of America*, and spoke on “Cosmogenic Nuclides as a Test for Extraterrestrial Impacts”, and “Astrophysical Events as Episodic Threats to Life on Earth”, respectively. Also, **Drew** has been promoted to Associate Professor of Physics at *MidAmerica Nazarene University*.

**Dr. Dimitra Atri** (Ph.D. 2011) had work “Galactic Cosmic Ray–Induced Radiation Dose on Terrestrial Exoplanets” published in the journal *Astrobiology*, and highlighted as one of the two most important articles in their October issue. They also issued a press release on the paper, which has been picked up worldwide. Dimitra will be visiting our department in early December, and doing a colloquium December 9.

**DEPARTMENT NEWSLETTER--CALL FOR ITEMS:** Please send your items to Adrian Melott (melott@ku.edu). It's a lot easier to use them if you make them editor-ready: Group them according to the kind of item. Use plain text or Word. Don't number them. Don't say "I visited the Sheboygan Zoo." Use your name (third person). Etc….