

KU DEPARTMENT OF PHYSICS & ASTRONOMY

College of Liberal Arts
& Sciences

WINTER 2012/13

A NEWSLETTER FOR FRIENDS & ALUMNI OF PHYSICS & ASTRONOMY



*Understanding
Nature
Starts Here*



**ALUMNI
ASSOCIATION**
The University of Kansas



Come for the Past, Stay for the Future!

***** **A CHANGE in the DATE** *****

Solid State Physics/Condensed Matter Physics/NanoPhysics
ALUMNI REUNION: Sept. 26 - 27, 2013

In the Fall newsletter, we included the invitation below for all alumni of the departmental research groups associated with solid state, condensed matter, or nanotechnology physics. The plan was to have a reunion of these alumni timed to merge into the regional CMP conference in Lawrence scheduled for March 2013. Unfortunately, it was discovered relatively late in the year that the original conference date conflicted with a national conference that would have minimized attendance at the regional meeting. For this reason, the CMP 57 meeting has been rescheduled for Sat./Sun. Sept. 28/29 2013. The secondary effect is that **REUNION 2013** has also been shifted to **Thu./Fri. Sept. 26/27, 2013**. We sincerely apologize for any inconvenience and hope that, with the greater lead time, more of you will consider attending. For completeness, we repeat the invitation below with the revised dates included.

In 2011 Physics and Astronomy initiated a series of events to bring alumni of the Department back to campus to view the significant changes in the program over the last 15 years, to encourage alumni and friends of Physics and Astronomy to renew and/or expand their association with the Department, and to contribute to future improvements in the Department. The first regional reunion took place in November 2011 and proved highly successful, in the opinion of the attendees. For the second **REUNION**, scheduled for **Sept. 26-27, 2013**, we have decided to piggyback onto the **57th Regional Condensed Matter Physics Conference**, taking place in Lawrence from **Sept. 28 - 29, 2013**. We are inviting all alumni associated in any way with the *solid state physics, condensed matter physics, or nanophysics research groups* at KU over the last 50 years (or greater!) to come back to campus to return, reconnect, and remember their experiences at KU while taking an in-depth look at the current program, including five full-time faculty as of January 2013, and their research. It is hoped that returning alumni will remain for the weekend and take part in the **CMP Conference** to gain insight into and contribute to what the field has to offer now and in the near future, but the **CMP Conference** is an event independent of the **REUNION** and is still being organized.

As a first step, we would like to hear from anyone who would consider attending the **REUNION** and, if you believe you are likely to attend, would consider taking part in the organization and planning of the **REUNION**. For our immediate purposes, if you are considering attending, please fill out the on-line form for the Reunion which can be accessed via the link

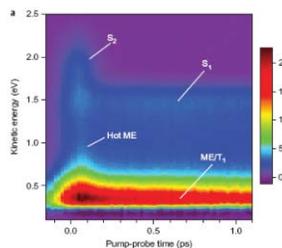
http://www.physics.ku.edu/alumni/submit_reunion.shtml

If you are considering attending and are in communication with other Physics and Astronomy classmates, let them know and invite them to join you. We will be sending invitations by letter, but the more avenues of communication we have, the higher the likelihood that no alumnus will be overlooked.

If you prefer, you are also welcome to contact the Department regarding the Reunion by sending email to Bruce Twarog at btwarog@ku.edu. Please check back with the REUNION web page

http://www.physics.ku.edu/alumni/alumni_reunion.shtml

RESEARCH NEWS



periodically for updates regarding the Reunion as we move closer to the date of the event. Thanks, as always, for your interest and consideration.

Speaking of CMP/Nanotechnology ...



[Distinguished Professor Wins Olin Petefish Award in Basic Science](#) Congratulations to **Prof. Judy Wu**, Distinguished Professor of Physics and Astronomy and Director of the Kansas Center for Solar Energy Research, for winning the *Olin Petefish Award* in Basic Science, one of four Higuchi-KU Endowment Research Achievement Awards, the state's most prestigious recognition for scholarly excellence. The Lawrence Journal-World article can be accessed at [this link](#). Judy was recognized at a ceremony held Friday, Nov. 2 at the Lied Center of Kansas.



[New Faculty Member Joins Energy Research Initiative](#) **Dr. Wai-Lun Chan** joined the Dept. of Physics and Astronomy as an assistant professor in January 2013. Dr. Chan earned his doctorate degree from Brown University in 2007. Before he joined KU, he was a postdoctoral research associate at the University of Illinois at Urbana-Champaign and, more recently, at the University of Texas at Austin. His research interests include studying the ultrafast electronic processes in organic semiconductors, metals and oxide materials. The resulting fundamental understanding leads to practical applications such as improving the efficiency of solar cells and photocatalysts for solar fuel generation.

AND THE AWARDS KEEP COMING...



[Professor receives Templeton Grant for Study of Cosmic Complexity](#) **Dr. Sergei Shandarin**, Professor of Physics and Astronomy is the recipient of a prestigious \$300,000 grant from the private John Templeton Foundation, part of a broader \$5.6 million award to the University of Chicago. The overall project, *New Frontiers in Astronomy & Cosmology*, involves 20 scientists from the U.S. and other countries, as well as 21 high school and college student essayists worldwide. Shandarin's grant is for a research project titled "The Emergence of Complex Structural Patterns: A Manifestation of Increasing Cosmic Complexity." The full press release can be accessed at [this link](#).



[Keck Foundation Funds Particle Astrophysics Observatory](#)

A grant provided by the W.M. Keck Foundation of Los Angeles will help support a University of Kansas research group that is part of a multiuniversity team pioneering tools for detecting and analyzing cosmic rays - particles that may unlock the secrets of our universe. Dave Besson, a professor of physics and astronomy at KU, leads the group and will use Keck funds to build the main receiver antennas for a new bistatic radar observatory in a

remote desert near Delta, Utah. The area is currently home to the Telescope Array RADAR Project (TARA), an integrated, 300-square-mile assemblage of telescopes and detectors established in 2007 to measure naturally occurring but highly energetic radiation reaching Earth from within and beyond our own galaxy. TARA is the largest cosmic ray detector in the Northern Hemisphere. For the full story, click on [this link](#).

[By Measuring Lithium, Researchers Learn About Stellar Structure](#)

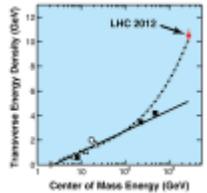
With collaborators at Indiana University and five KU undergrads, **Drs. Anthony-Twarog** and **Twarog** are probing the Li content in stars in an array of star clusters, learning about stellar evolution, galactic evolution, and cosmology. The project, recently funded by the National Science Foundation, includes extensive photometric and spectroscopic surveys of evolved and unevolved stars in a half-dozen star clusters. Analyses of the spectra provide insight into how the Big Bang nucleosynthetic



element, Li, has changed in the Galaxy over the last 13 billion years, as well as its evolution in individual stars over their lifetimes. Discovery of a unique Li-rich red giant was announced at the AAS meeting in Long Beach in Jan. The full story can be found at [this site](#).



[Astrobiophysics Research Featured in "Brief Communication Arising" in Nature](#) A rapid rise in radiocarbon (carbon-14) in the eighth century might have been due to a solar event, it is argued in a Brief Communication Arising published in this week's Nature. The commentary by **Prof. Adrian Melott** (KU) and Prof. Brian Thomas (Washburn University) challenges a report that was recently published in Nature and had ruled out a solar flare or a local supernova as the cause of this carbon-14 increase. The full story can be found at [this link](#). This research was also featured in the on-line site for **Forbes** in an article entitled "Decoding A Great Earth Die-Off: Was A Gamma-Ray Burst Really The Trigger?" by science writer Bruce Dorminey. The full writeup can be accessed at [this link](#).



[CMS Collaboration Analysis Featured in APS Blog](#) Additionally, results from the CMS collaboration, with strong ties to KU, detailing the "Most Perfect Fluid" were written up in the on-line APS blog discussing exceptional research. The full article can be found at [this link](#).



[KU Grad Student Wins CMS Award](#) Congratulations to Physics and Astronomy grad student **Jeff Wood** for his outstanding contribution to the ZDC development and operations at CERN which garnered him the

[CMS 2012 Achievement Award](#)



[Massive new mapping of the universe could unlock secrets of 'dark energy'](#) **Prof. Greg Rudnick** at the University of Kansas is playing an important role in **BigBOSS**, a huge new plan to grasp why the expansion of the universe is accelerating rather than slowing down. This mystery of physics is due to little-understood "dark energy," which has been calculated to make up roughly 70 percent of the cosmos. In addition to giving astronomers a better understanding of dark energy, BigBoss will be useful for investigating a wide array of questions ranging from the evolution of stars in our own galaxy to the large scale structure of the universe. The full story can be found at [this link](#).

ALUMNI NEWS



[Department Alum Helps Save the World! \(Kinda\)](#) While the Mayan Apocalypse 2012 never had any validity, occasional concerns about death from space do - just ask the dinosaurs or read the previous news item. KU alum Dr. Dave Tholen (University of Hawaii, Institute for Astronomy) led a team to obtain improved observations of the asteroid 2011 AG5. The data available previously implied a potential collision with Earth in 2040; with the new data, this option is off the table. The full story can be found at [this link](#).

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