ACCESS SUCCESS

Dr. David Berube (second from left) was recently appointed as director of the ACCESS Program. Short for “A Community Committed to Excellence in Scientific Scholarship”, ACCESS is a carefully designed year-long experience for first year students in the Seaver College of Science and Engineering. Selected students participate in an intense three-week summer program before the beginning of the fall semester, and receive continued advising and mentoring throughout their freshman year at LMU. The program aims to prepare students for academic excellence through collaborative engagement in scientific scholarship. Through participation in the summer program and activities throughout their freshman year, ACCESS students live by the program motto “You are no longer responsible solely for your own success, but for the success of your peers as well.” Over the past seven years, ACCESS has grown into a community of over 100 scholars, many of whom are leaders around campus, serving as club presidents, managers, members of the ASLMU senate, and more. Academically, many ACCESS students have been successful at LMU and beyond. Former ACCESS students are currently enrolled in medical schools, pharmacy schools, and graduate schools for physics, mechanical engineering, and nutrition. Alumni have also used their talents to make the world a better place by joining the Peace Corps and the Jesuit Volunteer Corps. The program is housed primarily in the Physics Department.

Faculty Focus

Wondering what's happening in the Physics Department? This new feature will highlight the research activities in which our faculty are currently engaged.

Dr. Gabriele Varieschi hails from Milan, Italy, and earned his Ph.D. in Physics from UCLA. His current research is primarily in alternative theories of gravity, in particular Conformal Gravity.

The year 2015 marked the 100th anniversary of Einstein's General Relativity, the best theory of gravity we have. Certain puzzles in modern cosmology and astrophysics, however, such as the so-called Dark Matter and Dark Energy problems, seem to suggest that possible revisions or adjustments to the theory are necessary.

Conformal Gravity is one of these possible extensions of GR, which might be able to solve the problems mentioned above, by adding a more general symmetry to the Universe: conformal symmetry, i.e., invariance under local stretching of the spacetime fabric.

Dr. Varieschi has involved numerous students in his research, and their work has appeared in many of the field’s leading journals. Their projects included studying the “warp drive” field configuration in Conformal Gravity, as well as the geometry of traversable wormholes.

In his free time, Dr. Varieschi enjoys skiing in the California Sierra and playing classical guitar.

Originally from St. Louis, MO, Dr. Jeff Phillips received his BS in Physics from the University of Virginia and Ph.D. from UC Irvine. His current research focuses on physics education, specifically cognitive and metacognitive skills that teachers and students need in the classroom to be successful. As part of this research, he has published multiple articles in peer-reviewed journals and served as a Co-PI or PI on two recent NSF grants.

Dr. Phillips leads an interdisciplinary project team that creates and studies instructional materials, which help science students become better problem solvers. The focus of the materials is improving how students self-regulate, that is, recognize and correct errors as they produce a solution. These activities have improved LMU student performance on real-world problems and increased motivation on pre-/post-instruction surveys.

In all of his projects, Dr. Phillips has involved students in the research. Several have published peer-reviewed articles and presented at local and national conferences.

When not on campus, Dr. Phillips treasures the time he gets to spend with his kids and, if he's lucky, on the occasional photography quest.
Faculty and Staff News

Dr. David Berube continued working with Connor Orr (PHYS) studying magnetic field line resonances in Earth’s magnetosphere, and Nicolas Breceda (CIVL) investigating ultra-low frequency waves and their relationship to geomagnetic storms.

Dr. John Bulman served on a panel presenting the different engineering disciplines offered at LMU, as part of the First Year Engineering Students’ Experience. This featured the work of LMU Physics alums Oscar Salazar with Neptek, on optical instruments for use on undersea oil drilling sites, and John Howard’s work with SpaceX on Li batteries for use in satellites.

Dr. Vincent Coletta held a Seaver Faculty Fellowship in the Fall semester, which provided course release time for research.

Dr. Gabriele Varieschi continued his work with Kellie Ault (PHYS) on wormhole geometries in conformal Weyl gravity.

Dr. Jonas Mureika worked with Luciano Manfredi (PHYS) and Mike Lerner (PHYS/ENTR) on phenomenological aspects of generalized uncertainty principle spacetimes.

Dr. Jeff Phillips was on sabbatical during the Fall semester, where he continued to study the ways that problem-solving is taught and methods that students use to self-regulate (identify and correct their own errors). Several papers that describe the results are now being prepared for publication.

Dr. Jeff Sanny is looking forward to his sabbatical in the Spring semester. Enjoy your newfound freedom!

Publications and Preprints

(* = LMU student co-author)

J. A. Phillips, “The macro and micro of it is that entropy is the spread of energy”, to appear in The Physics Teacher.


Conferences and Colloquia

Invited talk: J. Mureika, “Lower-dimensional black hole chemistry”, Mann Fest: A Celebration of Robert Mann’s 60th Birthday, University of Waterloo, Canada (06 Dec 2015)


Fall Social

The 2015 Physics Department Fall Social took place on Friday, October 9th in Seaver 109. Pizza and snacks were shared as students, faculty, and staff enjoyed casual conversation. The traditional bocce ball matches followed outside. Meanwhile, a friendly team darts game erupted between Physics majors Brad Stiehl and Ivan Jelic, and Drs. Sanny and Mureika. Thanks to Dr. Berube, Tami Adkins, and Anatol Hoemke for organizing the festivities!

Where Are They Now?

We are always delighted to re-connect with former students to see where life has taken them. If you are an alumnus/alumna, please drop us a line so we can feature your latest news!

Oscar Salazar (class of 1998) with his wife Teyra and their 12 year old daughter Carmen, visited the campus in August. Oscar is currently serving in the US Army Special Forces (Green Berets), station in Fort Bragg, NC.

Joshua Ford (class of 2002), the only known Physics graduate to hit the jackpot in Las Vegas, was on campus in August.

Bernie Ochoa (class of 2005) with his wife and 8 month old son, dropped by the Department in April.

David Broadwater (class of 2007) was seen at the Alumni Barbeque in September.

Gravitational Attraction

Over the summer, Dr. Mureika (second from left) co-organized the 2nd Karl Schwarzschild Meeting on Gravitational Physics, held at the Frankfurt Institute for Advanced Studies in Frankfurt, Germany (July 20-24th). The meeting drew together many leading experts in the field of classical and quantum gravity and cosmology. It also featured a mentoring program for “the next generation” of scientists, which paired graduate students and postdocs with keynote speakers. The Schwarzschild Distinguished Lecture was given by 1999 Physics Nobel Laureate Gerard ’t Hooft (pictured above to the left, enjoying drinks with the conference organizers).

Event Horizons - Fall 2015  Editor: Jonas Mureika  Email: jmureika@lmu.edu  Web: http://cse.lmu.edu/departments/physics