

Department Status!

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Sea Ice Research

Robin Pulliam
Harris—Alumnus,
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New Science Ed
Faculty Member

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Volunteers needed

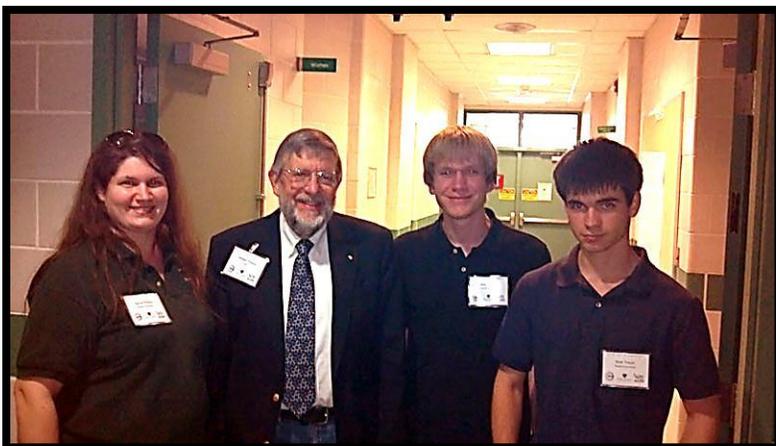
RU Physics Department!

No, that's not a typo up there. We are excited to announce that we are—officially, and for the first time ever at RU—the “Department of Physics.” This is in recognition of the growing role of the College of Science and Technology in the nationwide drive for more STEM (Science, Technology, Engineering and Mathematics) graduates. We have 6 full-time faculty including four physicists and two science educators (read more on this below). We also have a continuing Adjunct Instructor of Physics along with a shared (with the Geology and Anthropological Sciences Departments) full time Laboratory Coordinator, Mr. Paki Stephenson. Our Department Chair is Dr. Walter Jaronski. You can read more about the Physics Department online: <http://www.radford.edu/content/csat/home/physics.html>.

SPS News

The RU Society of Physics Students (SPS) has been especially active this year. Members of the SPS secured funding to travel to the National Radio

Astronomy Observatory at Green Bank, January 20-22, 2012. While there they learned about radio astronomy and had control of the 40-foot-diameter teaching telescope. Over the weekend the students made a number of observations, and made a special attempt to get a signal from Smith's Cloud, a huge extragalactic hydrogen cloud that will crash into our galaxy in just under 30 million years. Better stock up on water.

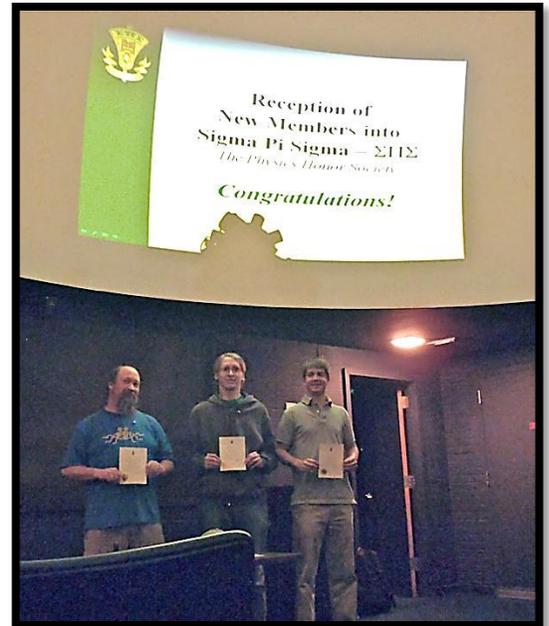


(l-r) Sylvia Phillips, Dr. William Phillips (no relation), Alec Frazier, Matt Trayer at the SPS Zone 5 Meeting at Wake Forest University.

On Saturday April 21 the RU SPS traveled to Wake Forest University to participate in the Zone 5 meeting (RU is in Zone 4) of the SPS. While there they met Nobel Laureate Dr. William Phillips. Dr. Phillips shared the 1997 Nobel Prize in Physics with Steven Chu and Claude Cohen-Tannoudji for his work in laser cooling. In addition, two of the RU students gave talks to the meeting on their sea ice research. Sylvia Phillips gave a talk titled “Electrical resistivity of the arctic sea ice.” and Alec Frazer gave on titled “Explanation of the OhmMapper and its use for geo-arctic research in Barrow, Alaska.”

Members of the RU SPS continued to help with the RU Science Days. This year they served as guides, sometimes took the lead in some of the physics demonstrations, and ran some of the planetarium shows. The 2011-2012 academic year saw nearly 1,500 K-12 students and teachers come to campus for these day-long trips that include a physics show, a planetarium show, a chemistry show, the earth science museum, the greenhouse and a forensic science presentation.

The SPS welcomed three new members into ΣΠΣ, the Physics Honor Society, on Friday, April 27. The induction was held in the Planetarium where new members were even “knighted” by ΣΠΣ President Matt Trayer. Of course the “sword” that Matt used was made of Styrofoam, but it’s the thought that counts. Pictured at right are (l-r) Marc Eaton, Walter Jaronski and Maxell Collignon.



Ongoing Sea Ice Research

Members of the Physics 450—Arctic Geophysics Research Class traveled to Barrow, Alaska, February 25-March 10 for their sea ice research. This trip continued the expansion of this research, along with the collaboration with the Southwest Virginia



Governor’s School, and added a formal educational outreach component coordinated by our



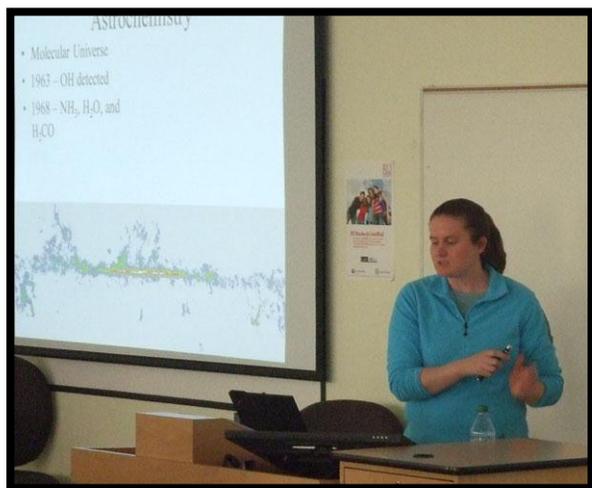
department’s newest full time faculty member, Ms. Mythianne Shelton.

This work extended the use of our ground penetrating radar unit, using our existing 500MHz and newly-acquired 250MHz antennae. After a week of data it turned out that—to the surprise of the group—neither of these could image the all-important ice/water boundary. We presented our results at the end of the week at the “Schoolyard Saturday” talk at the Barrow Arctic Research Center. One of the audience members was experienced sea ice researcher Dr. Karl Newyear. Dr. Newyear expressed what could almost be characterized as relief at our results since his experience is that there should be no sharp boundary between the ice and seawater. The ice should make a smooth transition from its solid form, giving way to a cracked and briny transition region, then to a slush layer, and finally to seawater. We will present these results at the upcoming Fall Meeting of the AGU.

The other thrust of this work was to field test a thermal data logging unit developed by the Governor’s School, especially their teacher Dan Blake (RU Physics ’05), who is also an Adjunct Instructor of Physics for us. The thermal unit they built is based on the Arduino® chip, and worked superbly in this extreme environment. The preliminary data indicates a strong correlation between the temperature at the surface of the sea ice and the thickness of the ice. We are continuing to analyze this data and will present our results at the Fall AGU meeting in December. The photo shows two students with the thermal data logger unit jury-rigged onto the GPR cart. This trip was definitely a study in innovation.



Alumnus Returns to Talk About Her Reserach



Dr. Robin Pulliam Harris (RU Physics, Chemistry ’06) came to campus on Thursday, April 12 to give a talk on her ongoing research in radio astronomy. Robin is a Postdoctoral Fellow at the National Radio Astronomy Observatory in Charlottesville. Her talk was sponsored by the SPS and the RU Club Programming Committee. Her talk was titled “Astrochemistry: From the Terrestrial Laboratory to the Interstellar Medium.” She detailed how she uses both of her majors in her work that starts in the terrestrial laboratory and continues with data obtained from radio astronomy observatories. Her talk was attended by over 60 RU students and faculty. Afterwards, a group of attendees went to the ever-faithful MacAdo’s for some socializing. Robin was finishing up her second year of her postdoc

position and continues to enjoy this challenging work.

New Faculty Member in Science Education

We would like to welcome our newest full time faculty member, Ms. Mythianne Shelton. Ms. Shelton is likely familiar to some of you since she has been teaching as an adjunct for us for a few years. She received her BS in Early and Middle Education from Radford University in 1981, her Master’s in Science Education (1991) and Curriculum and Instruction (1991) from RU, and will finish her PhD in Science Education at Virginia Tech in May 2013 (projected). She has over 21 years of experience in working with children, adults, and administrators as an educator. She has taught extensively in Henry County, and has recently taught at both RU and Virginia Tech.



Ms. Shelton piloted a classroom outreach effort one week in March 2010 on the Barrow research trip, connecting via Skype with a number of classrooms in southwestern Virginia. Building upon that experience, she coordinated two pre-service (student) teachers on this year's trip, with one pre-service teacher traveling to Barrow each week. Ms. Shelton and the RU student made dozens of classroom webcasts, making contact with more than 500 distinct individuals (no double-counts!) each week. Often starting their sessions at 4am local (Alaska) time, Ms. Shelton and her students connected the K-12 students in southwestern Virginia (and Maryland and Florida) with the sea ice research each day, reporting on each day's results and coordinating arctic-themed activities with those classrooms. She recruited the research students to talk with the classrooms, exposing them to the valuable idea that research needs to be explained to anyone who will listen. She will be a valuable addition to our department, and will be heavily involved in our mission of "teaching the [future] teachers."



Alumni Advisory Council

We need representation from our alumni on the College of Science and Technology's Alumni Advisory Council. This role may be served either remotely, or in person. We would like your input for our current majors with regards to needs and challenges for industry, teachers and graduate schools. Job search tips, professional connections and career advice are also appreciated. The Alumni Advisory Council meets yearly to connect with current faculty and students. The CSAT Alumni Advisory Council will meet again in October 2012. If you are interested in serving on this panel, please contact Dr. Rhett Herman, rherman@radford.edu.

Contact Us

Let us know what you're doing, how you're doing, and where you're doing it!

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Online

<http://www.radford.edu/content/csat/home/physics.html> (new address!)

<http://www.facebook.com/pages/Radford-University-Physics/252289272464>