

Drs. Michelle and Shane Larson open the new Planetarium

Meet our newest physicist

Arctic Geophysics students present research at Fall Meeting of the AGU

SPS goes to New York and almost gets to see you-know-who!

Physics Food Truck visits campus

New $\Sigma\Pi\Sigma$ members inducted by National SPS Director

More graduates, and more from our Physics/Engineering Dual Degree program

2018 Arctic Geophysics trip is coming!

Grand Opening of the new Planetarium

On Friday and Saturday, April 29-30, 2016 a “Launch Party” was held for the official opening of the new Radford University Planetarium. This new state-of-the-art digital facility can seat 55 visitors and will add a new dimension to our own astronomy education. In addition to greatly enhancing our Science Days outreach program, a number of other visually-intensive disciplines will be able to use its projection capabilities to augment their disciplines. The highlights of this 2-day event were two guest speakers sponsored by the SPS and $\Sigma\Pi\Sigma$, with each organization taking the lead in securing funding and coordinating advertising for one of the guests.

$\Sigma\Pi\Sigma$ sponsored **Dr. Shane Larson**, a research astrophysicist at Northwestern University and a member of CIERA (Center for Interdisciplinary Exploration and

Research in Astrophysics). In addition, he serves as an astronomy educator at the Adler Planetarium. Dr. Shane Larson gave a talk on gravitational waves titled “From Black Holes to LIGO: The Dawn of Gravitational-wave Astronomy.”

Dr. Mike Freed joins the Physics Department

We are pleased to have Dr. Michael Freed join our faculty as a full-time Instructor of Physics. Dr. Freed is originally from Hampton, VA, and took a circuitous route to his PhD. After high school, he worked as an apprentice at the Newport News Shipyard while finishing his Associate Degree in Mechanical Technology at Thomas Nelson Community College. While working there he realized his career goals and decided to return to school full time to pursue a degree in astrophysics.



The SPS sponsored **Dr. Michelle Larson**, President and CEO of the Adler Planetarium in Chicago. Dr. Larson met with our students and the general public at this event. She gave a few dedicatory remarks to “officially” open the new planetarium at its formal inaugural show. And she gave a featured talk—open to the university and the public—titled “Science has a story to tell” describing her extensive work in science education and outreach.



He attended Northern Arizona University (NAU) for his Bachelor’s degree in Physics & Astronomy. He said that he chose NAU mainly due to their small class sizes, which gave students the chance to interact more with the professors.

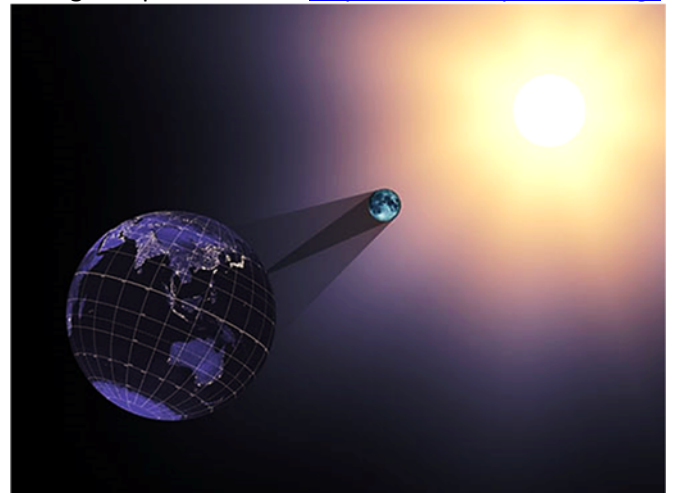


Dr. Freed then went on to Montana State University (MSU) to pursue his PhD in physics. He chose this graduate school because of its reputation as being one of the top schools for studying solar physics. His thesis entitled “An Empirical Study of Coronal Observations at the Solar Limb” concentrated on understanding how small length scale changes to plasma flow in the Sun’s atmosphere could contribute to space weather conditions. His goal was to quantify the role turbulence might play in triggering solar flares or coronal mass ejections.

During his time at MSU, Dr. Freed managed MSU’s science public outreach program, worked as an AmeriCorps member, and participated as an event organizer for Science Olympiad. He also worked as a chief observer for the Hinode satellite X-ray telescope operated jointly by NASA, ESA, and by the Japan space agency JAXA.

Dr. Freed had a good first year here. He taught not only the standard physics classes but also a Selected Topics “Solar Physics” class for interested students in the spring.

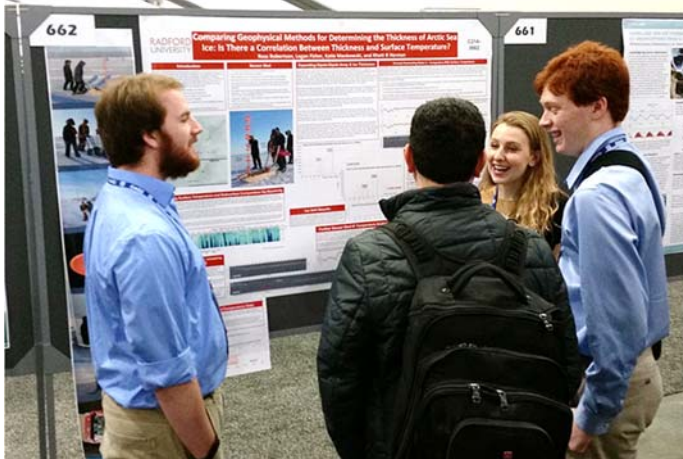
He is currently planning a trip to a location near Nashville, TN, to participate in a large-scale effort to study the solar eclipse on August 21, 2017. He has obtained funding for a special telescope/camera system to record data from the eclipse. These data will be merged with that of others across the country to help form a more complete picture of the physics contained in the eclipse. A great starting place for all things eclipse-related is <http://www.eclipse2017.org/>



Dr. Freed will take students on this trip to involve them with the data acquisition. He has also indicated that alumni are welcome to join this trip! For more information, contact Dr. Freed at mfreed@radford.edu.

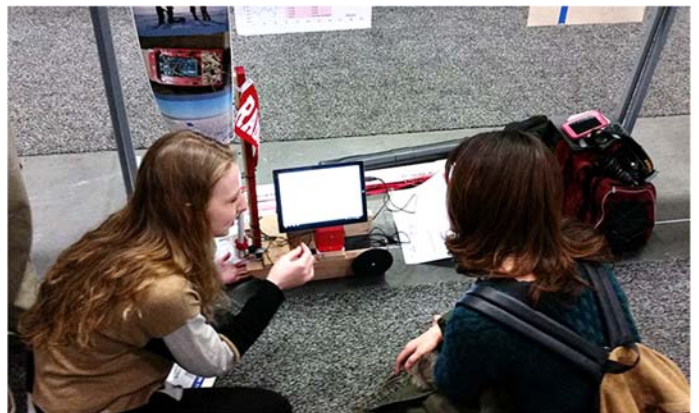
Arctic Geophysics Students at the AGU

Three students joined Dr. Rhett Herman at the Fall Meeting of the American Geophysical Union December 12-15 to present the results of the Spring 2016 PHYS 325 – Arctic Geophysics class. The poster was titled “Comparing Geophysical Methods for Determining the Thickness of Arctic Sea Ice: Is There a Correlation Between Thickness and Surface Temperature?”



Left to right: Ross Robertson, Katie Mankowski, Logan Fisher talk with a visitor to the poster.

The group even created a small demonstration version of the main sensor sleds they used in Alaska. In the picture below Katie Mankowski shows a curious AGU attendee how the demo sled worked and the circuitry that was created for the sensors.



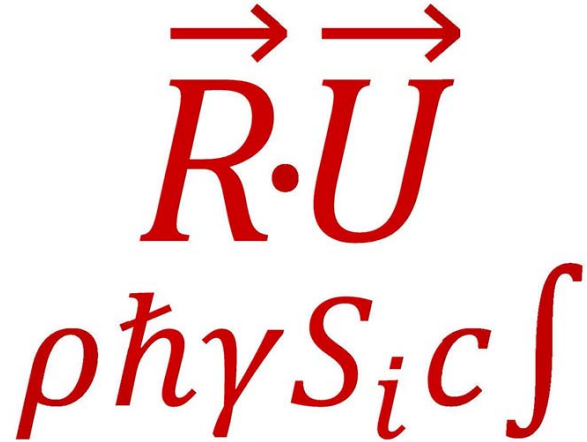
In the end the data concluded that a potentially new technique – an “expanding dipole-dipole array” using the OhmMapper – was able to determine with great accuracy both the location of the bottom of the sea ice as well as the sea floor below.

Society of Physics Students in New York

Over the weekend of January 20-22 the RU SPS traveled to New York City to visit the American Museum of Natural History and the Hayden Planetarium. This road trip was organized by SPS and $\Sigma\Pi\Sigma$ member Josh Carroll, a US Army veteran and May 2017 Physics graduate, who always wanted to go, and who said that he dreamed about this trip while deployed in Iraq.



While the group was in the Hayden Planetarium Josh wanted to give Dr. Neil deGrasse Tyson an original SPS-designed t-shirt. While Dr. Tyson was not in his office, his administrative assistant took the t-shirt to give to him later. The logo design below is by SPS member Morgyn Church. If you are interested in one of these t-shirts (black, with red logo) please contact SPS President Ross Robertson at rrobertson3@radford.edu



Physics Food Truck visits campus

The TeachSpin Food Truck for Physics visited Radford University's campus on April 27, 2017 and was a big hit. physicist-trucker Carl Grossman was the host of the truck. The SPS not only helped to promote this visit but also helped to pack the 44-foot-long trailer that was full of physics experiments. Many of the TeachSpin experiments that many of you worked on in e.g. the Modern Physics lab were in here including the muon counter, a small NMR experiment, interferometry, and others.



A good time was had by students and faculty members from the Physics Department as well as many other departments. The entire campus was invited and, at times, it seemed like they all showed up at once!



New $\Sigma\Pi\Sigma$ Members Inducted

The SPS welcomed SPS National Director Dr. Brad Conrad to their spring induction ceremony for new $\Sigma\Pi\Sigma$ members. Dr. Conrad gave a great talk about careers that a Physics major opens up. Afterwards, he and outgoing RU SPS President Stephen Foster conducted the official induction ceremony. This included the traditional “knighting” of new members. All of this occurred in the Radford University Planetarium, a facility managed by the RU Physics Department.



Left to right: Dr. Brad Conrad, Teagan Eaker, Jackie Burns, Liuni chen, Logan Fisher, Morgyn Church, Stephen Foster (outgoing $\Sigma\Pi\Sigma$ President)

New Graduates, Including Dual Degree Grads

We had 9 graduates this year including 2 in December and 7 in May, 6 of whom are pictured below.



As usual the Department hosted the graduates and their families/friends for the traditional Graduates' Breakfast. This year's crop of decorated mortar boards were quite good. Josh Carroll expressed his fondness for both the Maxwell Equations and his outstanding work in the RU Planetarium. And Andrew Cohen expressed his inner physics geek!



“One of the most important things it gave me was a more holistic viewpoint. I now have one eye being that of an engineer and the other eye being that of a scientist. But through both eyes I understand both fields much more thoroughly, and understand more deeply the science and engineering behind everything around us. Another thing is that having “I graduated from two degree programs simultaneously” on your resume impresses potential employers. Whether it be internship or job interviews, I have always been asked about this. Frankly, some fields of engineering are very competitive and this leg up on the competition is well worth the hard work. In my case, having both degrees meant that I was better suited to take on a role where the line between science and engineering blurred.”

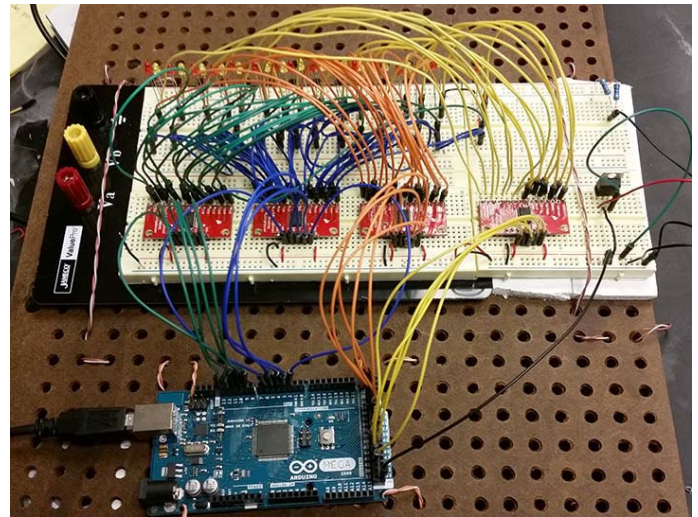
Spring 2018 Arctic Geophysics Trip

It is time to start planning for the Spring 2018 PHYS 325 – Arctic Geophysics trip to Utqiagvik (formerly called “Barrow”), Alaska. Your amazing generosity on the previous trip (2016) helped to offset some of the costs for the students involved in this research. We would like to let you know how you can help support the “next generation” of student researchers by listing some of the specific costs for each person on the trip. Those estimated costs include:

- \$1,500 plane ticket to Utqiagvik (nee’ “Barrow”)
- \$ 520 weekly lodging
- \$ 400 UIC Science logistics charges including workspace rental, administrative fees, etc.
- \$ 240 meals for one week (including \$28 for each evening meal in the Ilisagvik College cafeteria)
- \$ 160 required land-use permit

As you know – and as many of you have experienced – this research and its “capstone” trip are powerful experiences for an undergraduate. We again hope that you can support this for our students. Contributions could easily start at e.g. \$28 for one of the students’ evening meals (yes, everything is very expensive up there).

Currently we are working on the next generation sensors that we will take to Alaska in a few months. Much of this is based on the results from the 2016 trip, and will include a unique custom-built “microresistivity array.” The main control structure for this new equipment is based on an Arduino microcontroller as well as a number of multiplexers (work done by 2 research students just this past spring). This will allow us to definitively test to see if our 2016 discovery of the “expanding dipole-dipole” method will yield a quick way to measure sea ice thickness over a large area.



*Any and all support for these students is appreciated.
Details for making a contribution are below.*

Contact Us

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

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<http://www.radford.edu/physics>

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

To donate **directly** to the Physics Department, or one of the funds within the department click the following link:

<https://connect.radford.edu/give>

After filling in your donation amount, go to the pull-down list and select “Other (please specify).” Then type any of the following into the box:

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