

# ∫ Integram

## EMU Mathematical Sciences Department

### Winter 2011

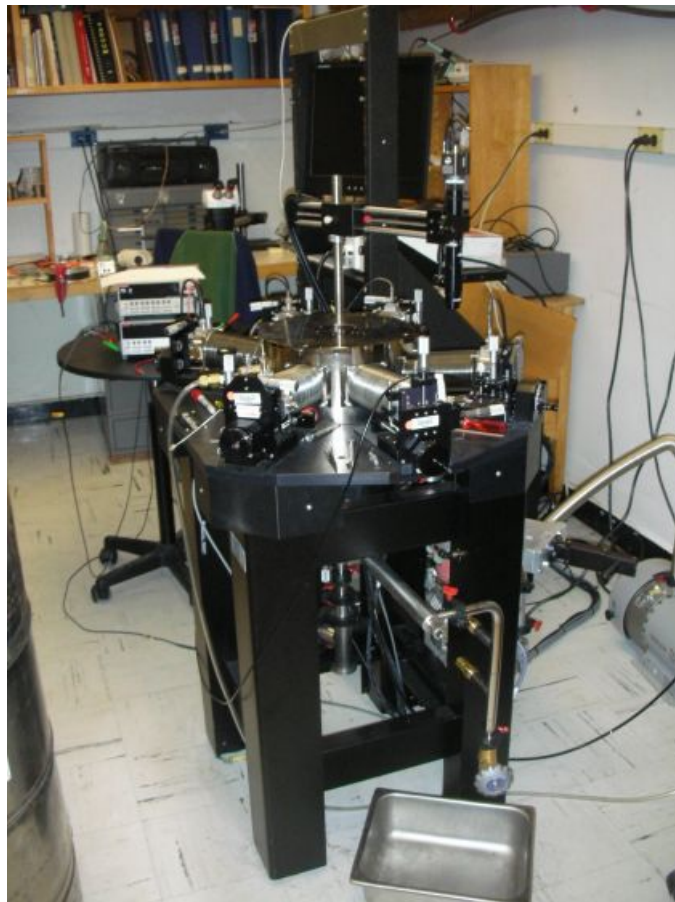
In this issue:

- [Electronics Class Trip](#)
- [Department News](#)
- [Problem Corner](#)

[Back to top](#)

## Electronics Class Trip

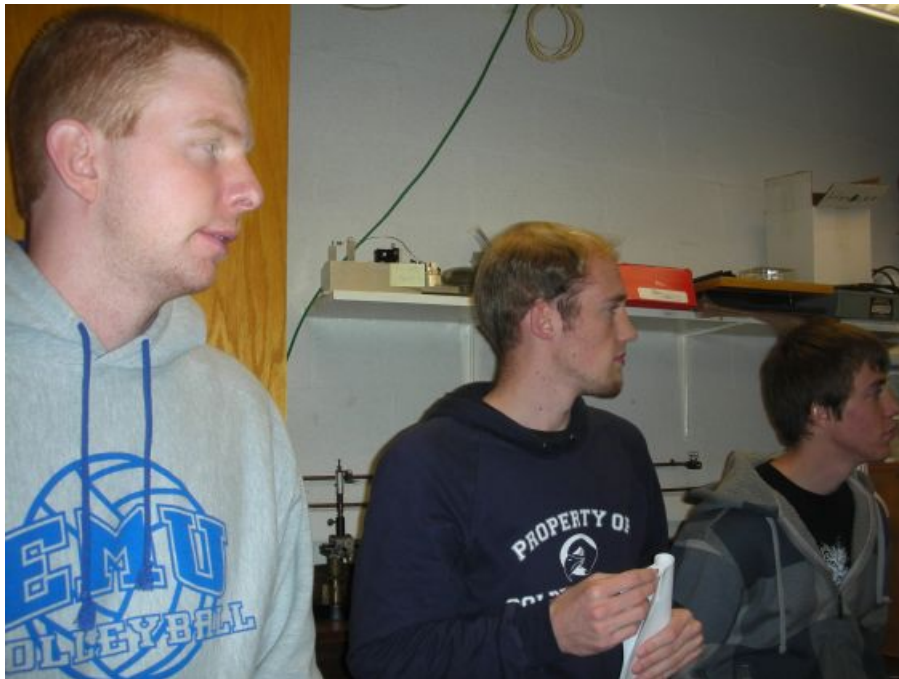
On the fourth of November, Leah Boyer and John Horst took the Electronics class on a one-day field trip to the University of Virginia. Dr. Robert Weikle gave a brief introduction of UVA Engineering School and Research Activities, and then the group took a tour of the UVA Microfabrication Laboratory, the Far-Infrared Receiver Laboratory, the Cleanroom, the Nanoscale Materials Characterization Facility and the National Radio Astronomy Observatory Engineering Labs.



We asked the students from the class for their thoughts about the trip and here are a few of the responses.

Greg Knight said “Our trip to UVA was a great one. We met a bunch of really intelligent people and saw tons of amazing lab equipment. I had never been to UVA before and the campus was amazing. On top of the interesting lab equipment we came across, we also got a little bit of history from walking around the campus. One of my favorite parts of the day was when we went and saw some of UVA’s satellite dish construction. We got to stand right next to the cores of the giant satellite dishes you sometimes see. It was cool to be that close to something that could receive such complex information from such a far distance. They build these cores in one of UVA’s off campus sites and ship these vital pieces all around the country to receive signals from tons of different satellites in space. It was definitely worth taking the trip and I would hope that the trip is offered again next year.”

Ben Roth said “It was definitely a worthwhile experience. There was a lot of information that was more advanced than what we had been talking about in class, but the parts I did pick up were interesting and electrifying (hehe). It was nice to see that they build their own equipment and that there is a use for all our tedious soldering and circuit building we’ve had to do in class. A future class project should be to build a 3 billion dollar microscope.”



Edwin Torres (who also provided these photos) said “The trip to University of Virginia was an interesting experience. [...] The introduction that was given at first, I thought it to be a little over the top. This was because the complexity of the material that had been covered up until that point in our electronics class had not been much. [But], when we were taken down to the labs it was a different experience. In the labs I liked how each machine’s purpose was explained and how it contributed to the overall work that was being done in the labs. I also thought that the way that chips were made in one building and tested in another was definitely a way to further the knowledge of these subjects. The presentations of the various departments was a great experience with each showing us a little of what we could be doing ourselves or what we could be looking forward to doing.”

Justin Hershey said “My favorite part of our trip to UVA was the stop at the Observatory. I didn’t understand very well how the wafers were created at UVA but it was a little easier to understand how they were put to use at the observatory. The most interesting part was how they kept the receivers cool so that they could pick up very small signals. It was also great to hear about how different countries across the globe can work together on science with the same goals in mind.”



[Back to top](#)

## Department News

**First-year student Mark Harder** is the recipient of the Brenneman-Longacher Endowed Mathematics Scholarship this year. Mark made the long trek from Mountain Lake, Minnesota, to Harrisonburg to join the EMU community this fall. Mark plans to double major in mathematics and computer science; he says that he has always been interested in finding patterns in things and seeing how he can apply those patterns to other things in life. In his free time, Mark enjoys playing frisbee, running, programming, reading, and participating in theater productions. Mark is also well-traveled, having been to 48 of the 50 states! Mark will receive \$1250 per year for four academic years.

**EMU's first-year math, computer science, and pre-engineering students** have participated in a variety of STEM learning community activities. A National Science Foundation grant has provided resources for all STEM (Science, Technology, Engineering, and Mathematics) students at EMU and three other area colleges to engage in activities intended to strengthen the learning experience. At EMU, students are organized by major into four "cells" of students, for the purpose of laying a foundation for academic success, making connections with other students, and increasing awareness of STEM-related opportunities. An upper-class student serves as a mentor for each STEM cell; junior math major Laura Hershey has filled the student mentor role for the new mathematical sciences students this fall. Fall events for the mathematical sciences STEM group have included several lunches, a dessert and game night in the home of Deirdre Smeltzer, and a meeting at EMU's Common Grounds coffee house.

[Back to top](#)

## Problem Corner

Congratulations to Tim Brenneman and Ellis Detwiler, who correctly solved the Muddy Bicyclist problem from the Fall 2009 Integram. The bicyclist traveled one mile in about 3.875 minutes.

Also, congratulations go to Tobias Stoner, Mark Miller, Joe Hochstetler, Jesse Blosser, Micah Martin, and John Snyder who correctly solved the fence post problem in the Spring 2010 Integram.

### **New Problem:**

We have a challenging problem for the current issue, sent to us by John Snyder. It should appeal to those who love Origami: A square with sides of length one is to be folded along some line passing through the center of the square. The smallest possible area for the resulting figure is one-half. What is the largest possible area?

Submit solutions to Owen Byer at [byer@emu.edu](mailto:byer@emu.edu). And please, could we have a female submit a solution this time?

***Are you (or do you know) a prospective student who is interested in studying math at EMU?***

Contact Deirdre Smeltzer at [smeltzed@emu.edu](mailto:smeltzed@emu.edu) for information about applying for the Brenneman-Longacher Endowed Math Scholarship.

[Back to top](#)

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