Joint Institute for Nuclear Astrophysics

PAN Intersession 2013 @ IMSA, Aurora IL

Since its inception in 1986, IMSA graduates have left their mark on the world in a variety of fields. Just in terms of the internet, Apache servers, Netscape, YouTube, and Paypal can be traced to alumni of this 3-year residential high school for Illinois students gifted in math and science. Instituted in the late 90s, intersessions are week-long courses taught by IMSA alumni and faculty prior to the start of the spring semester. This year, two alumni, Bec Shane (NSCL Post-Doc) and Micha Kilburn (JINA Post-Doc), teamed up to teach the 2nd intersession on nuclear astrophysics. 10 students (9 sophomore males, and 1 senior female) signed up for the PAN course, choosing from a wide range of offered subjects such as cooking, karate, and time travel in literature.

Modeled after the PAN summer camps, interactive lectures on nuclear physics, theory, nucleosynthesis and experimental techniques were coupled with experiments using three different radiation detectors. Students learned to solder and built their own Geiger counters using kits from mightyohm.com to measure the relationship between radiation and the distance from source. Students used NSCL CRDs to measure the relationship between cosmic ray flux and the angle with respect to Earth's surface. The 3rd experiment used QuarkNet CRMDs and online resources to measure the lifetime of the muon. The last afternoon was reserved for student presentations in which they reported on one experiment of their choice and a related topic of interest that they researched during the week. In the true spirit of IMSA, all experiments were discovery based, and students were given minimal instructions and background information. For example, before measuring the lifetime of the muon, they were encouraged to calculate how long it takes for a particle to travel through the atmosphere at the speed of light, but time dilation was not mentioned. The “answers” and importance of the experiments were provided during the last minutes of the 30 hr course.

According to pre/post surveys, 90% of the students agreed or strongly agreed that the intersession better prepared them for a career in science, increased their interest in science, and increased their knowledge of majors, careers, and opportunities. 100% enjoyed the intersession and would recommend it to a friend. Many inquired about the applications for the summer PAN.

“The unique, though often difficult, soldering experience and CRMD work proved both to be enjoyable and informative activities.”

“I liked the fun and low-key atmosphere yet how the projects we did were intensive and hands on.”

“I was inspired by seeing IMSA alumni in really cool careers and excited about what they were doing and it makes me realize I could go that route as well and may choose to do so.”

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