

## PAN @ IMSA Intercession 2014

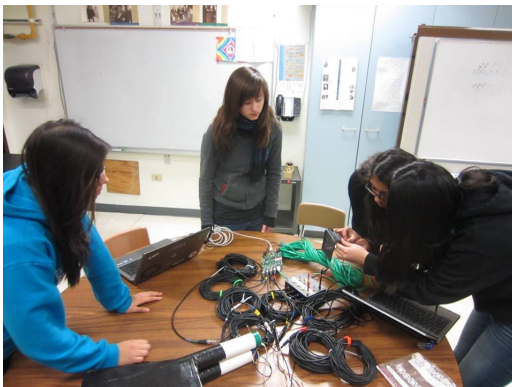
The Illinois Mathematics and Science Academy seeks to ignite and nurture creative, ethical, and scientific minds that advance the human condition. Instituted in the late 90s, intersessions are week-long intensive courses taught by IMSA alumni and faculty prior to the start of the spring semester. For the 3<sup>rd</sup> year, Micha Kilburn returned to her alma mater to teach a modified PAN during intercession. 13 students (7 females) signed up for the PAN course, choosing from a wide range of offered subjects such as robotics, karate, and comedy improvisation.

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 3<sup>rd</sup> 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 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, 85% of the students agreed or strongly agreed that the intercession better prepared them for a career in science and increased their interest in science. 100% said it increased their knowledge of careers opportunities in physics. Many inquired about the applications for the summer PAN.



*“Great class! I'm even more into physics and atomic science and I'm glad some basic about college and what researchers do was covered”*



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