



## PAN (Physics of Atomic Nuclei) July 27-31, 2015



### Audience

24 science-focused high school students. 12 students were female, and 4 were underrepresented in the field. Participants were selected based on interest in science as demonstrated through their applications.

### Funding

Program expenses (~\$15,000) are provided by a National Science Foundation grant to the Joint Institute for Nuclear Astrophysics (JINA-CEE), making PAN free to accepted applicants. The National Superconducting Cyclotron Laboratory (NSCL) also supports PAN by donating facilities and faculty/staff volunteers in kind.

### Objectives

JINA's goals for PAN are as follows:

- Teach students about the discipline and current topics of nuclear astrophysics.
- Promote the importance of nuclear research as a worthy investment.
- Introduce students to undergraduate/graduate life and research careers at MSU.
- Increase interest in nuclear physics/astrophysics.

### Description

PAN (now in its 22nd year) houses participants on campus. Program hours (45 intentional contact hours) are an intensive mix of faculty lectures, activities, and training sessions introducing students to experimentation methods, equipment, and results. These prepare students to conduct research using theoretical models, gamma spectroscopy, and radioactive decay measurements. Students complete the program with a poster session to report their findings. Optional activities each evening allow students to learn more about MSU, research, and the college experience. PAN activities were directed and supported by 7 MSU faculty, 1 MSU postdoc, 7 MSU graduate students, and 3 MSU staff members. Students experienced 45 contact hours in the program.

### Outcomes

Students were given pre- and post-surveys to gauge the effect of the program. Questions involved their interests and motivations before and after attending PAN.

- 75% agreed that PAN increased their interest in attending MSU.
- 90% agreed that the PAN program made them more excited to go to college.
- 90% agreed that the PAN program better prepared them to attend college.
- 100% agreed that PAN changed their understanding of

what a research career requires.

- 95% agreed that PAN improved their understanding of how to prepare for a science career.
- 90% agreed that PAN increased their interest in careers in physics, astronomy, or nuclear science.
- 85% agreed that PAN developed their skills in working with a group.
- 100% agreed they would recommend PAN to a fellow student.
- 85% agreed that PAN will influence their career plans or future academic paths.

In response to survey questions, students offered these thoughts on their PAN experience:

- "I am now more interested in pursuing the highest level of education and career for nuclear science because PAN has gotten me even more interested in the field."
- "PAN made science careers and college paths seem much more interesting and obtainable. Talking with the grad students and faculty was an incredible resource."
- "I would love to do research in the future."

### Additional Significant Information

David McCreight, a physics teacher at Lansing Eastern High School, has co-directed the program for many years. As a partner, he brings a teacher's knowledge and perspective to help connect with participants and focus the curriculum on secondary education.

### Contact Information

Zach Constan  
NSCL Outreach Coordinator  
640 S. Shaw Lane  
Michigan State University  
East Lansing, MI 48824  
Phone: 517-333-6363

Email: [constan@nscl.msu.edu](mailto:constan@nscl.msu.edu)

Program website: <http://meetings.nscl.msu.edu/pan>

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