



PAN (Physics of Atomic Nuclei) July 23-28, 2017

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-Center for the Evolution of Elements (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-CEE'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 24th year) houses participants on campus. The 45 intentional contact hours of the program 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 various detectors and modeling code. 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.

Outcomes

Students' attitudes towards research careers were measured with pre/post surveys.

- 100% of students agreed that PAN improved their understanding of the work involved in a science career and their understanding of how to prepare for a science career.
- 80% of students reported increased interest in physics, nuclear physics and nuclear astrophysics career paths.
- 85% of students expressed increased excitement about attending college, while 90% said they were more confident in completing their desired degree and 80% believed PAN had better prepared them to attend college.



- 96% agreed that the faculty, staff, and students involved in PAN gave them a positive impression of scientific research.
- 96% agreed that they had learned useful things about research at NSCL, science careers, and nuclear science.
- 96% agreed that PAN had increased their interest in attending MSU.
- 100% agreed that they found PAN useful and would recommend it to a fellow student.

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

- "This program has made me contemplate a career in nuclear science. I feel more prepared for college and more able to make decisions about my future."
- "PAN has really opened my eyes to all of the possibilities there are to research things that you are actually interested in. I've never really experienced an atmosphere where so many people love their job and enjoy coming to work, and at PAN everyone was like that, everyone loved what they were doing. It wiped away the stereotype of the quiet, boring, single scientist that sits at a desk all day starting at something."
- "This changed my perspective on what the science world is like. Meeting so many people who do their own research has made me realize that there are great, kind people to work with in this community."

Contact Information

Zach Constan
NSCL Outreach Coordinator
640 S. Shaw Lane
Michigan State University
East Lansing, MI 48824
Phone: 517-908-7363
Email: constan@nscl.msu.edu
Program website: <http://www.jinaweb.org/outreach/PAN/>

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