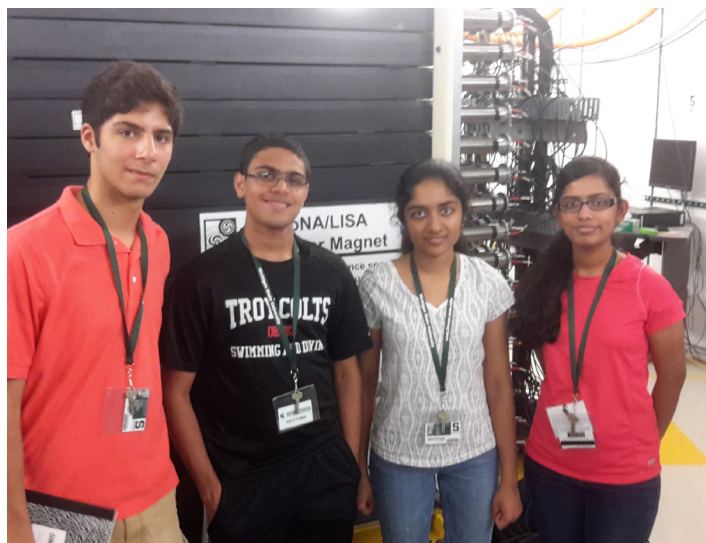


## PAN (Physics of Atomic Nuclei) August 4-8, 2014



### Audience

24 science-focused high school students. 12 students were female, and 5 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), 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 21st 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 the \$1 million Modular Neutron Array. 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.

- 96% of students agreed that PAN improved their understanding of the work involved in a science career, while 90% indicated that PAN improved their understanding of how to prepare for a science career.
- 64% of students reported increased interest in physics nuclear physics and nuclear astrophysics career paths.
- 96% of students expressed increased excitement about attending college, while 86% said they were more confident in completing their desired degree and 85% believed PAN had better prepared them to attend college.
- 95% agreed that the faculty, staff, and students involved in PAN gave them a positive impression of

scientific research.

- 100% agreed that they had learned useful things about research at NSCL, science careers, and nuclear science.
- 95% agreed they would recommend PAN to a fellow student.

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

- "I learned much more than I knew previously about career potentials and the paths to take in college to get where you want to go. I also didn't know so many research opportunities existed."
- "This program shattered my expectations. It was extremely fun and helpful, and it was honestly the best week of my life. I loved being with people who were equally passionate about science as I am."
- "I feel a lot more confident about what I would do if I choose physics as a career."

### 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

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