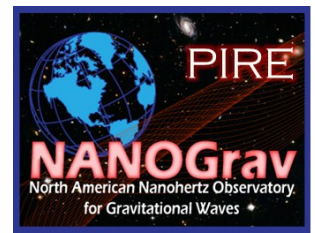




# NANOGrav PIRE

## SMARTSTART EVALUATION NEWSLETTER



VOLUME 1, QUARTER 3

MARCH 2011

Evaluation activities in Quarter 3 focused on interviewing the research abroad mentors, evaluating the NANOGrav-PIRE meeting, and conducting focus groups with undergraduates, graduate students, and postdoctoral researchers. Additional evaluation support materials were developed, such as an evaluation timeline, a logic model, benchmark charts, and a Working Group report template.

### QUARTER 3 EVALUATION COMPONENTS

#### Mentor suggestions for minimum capabilities

- Experience with Linux
- Experience with pulsar software
- Background knowledge of pulsars
- Exposure to pulsar research
- Two years of college-level calculus and physics
- Be in junior or senior year
- Top 20% of their class
- Adequate maturity and motivation



#### Research abroad mentor interviews

- Mentors reported that US students generally do not have the knowledge, skills and academic preparation to fully participate in this type of research program, especially as all CSIRO work is conducted using a LINUX operating system and none of the US students know this system.
- Mentors stated that when students' content background and pedagogical training are too weak, their contributions to the research are limited. A suggestion for a significant student contribution would be to co-author a research paper with the mentor(s).
- Mentors saw the student grow and improve while conducting research with them.
- Mentors would both be willing to host an international PIRE student again. Of great concern to the mentors was the fact that PIRE money only supports US students to go abroad. Mentors suggest that a method of reciprocity must be developed in order to sustain and develop international NANOGrav-PIRE relationships.

### PROJECT GOALS

- Goal 1: Knowledge
- Goal 2: Education
- Goal 3: Partnerships
- Goal 4: Institutional Capacity
- Goal 5: Workforce Development

### NANOGrav-PIRE meeting at University of British Columbia

The NANOGrav-PIRE meeting was held for two days in January 2011 and 35 participants completed evaluation forms.



**Student tutorials evaluation:** Very small numbers of students attended some of the student tutorials. Requests were made for the student tutorials to be videotaped.

**Meeting evaluation:** Most activities were rated *good to excellent*. Breakout sessions received very high ratings and positive comments.

#### Useful components

- Face-to-face interaction with collaborators and networking opportunities were appreciated.
- Participants recognized the importance of organizational discussions

#### Suggestions for improvement and future topics

- Participants of all levels commented that they would have been interested in hearing more about science, though commented they understood the need for the organizational discussions especially at the beginning of the project.
- Faculty would like more breakout sessions and time to get things done.
- The student reports were well-received but could be better organized with better time constraints. It was stated that these would be an important part of future meetings and students reported needing advanced warning of giving reports.

#### Focus groups with undergrads, grads and postdocs

The evaluator conducted focus groups during the NANOGrav-PIRE meeting with eight undergraduates, eight graduate students, and four post-docs. Eighty percent were male and 65% were Caucasian. The majority (60%) have been working with NANOGrav for between 1 -2 years, but experience ranged from less than one year to between 7 -8 years. All reported very positive experiences.



- Undergrads requested information such as why they are searching for pulsars, where their data goes, and what happens to it. Developing a pamphlet would help students see the big picture, including information on the mission and goals, the participants' and their institutions and projects, and the data process.
- Grad students and post-docs report beliefs that they have advanced new knowledge and discoveries. They feel prepared to participate in international collaborations, but were unsure how to prepare logistically for going abroad (e.g., visas, insurance).



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## QUARTER 3 COMMENDATIONS

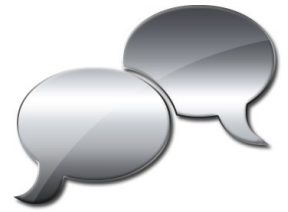
### Project Organization:

- Goals are established
- Logic model developed
- Benchmarks and timelines established
- Quarterly and annual working group reports
- Monthly telecons
- The PIRE project has made significant progress in bringing researchers and institutions together from around the world.
- It has established a foundation for the discovery of gravitational waves from the timing of radio pulsars. The PIRE project has established many opportunities for developing the next generation of pulsar astronomers and advancing scientific knowledge in this field.
- Research abroad mentors, focus group participants, and NANOGrav-PIRE meeting participants were very positive about the implementation of this project and the progress it has made in advancing knowledge, partnerships, and education.

## QUARTER 3 RECOMMENDATIONS

### From study abroad mentors:

- The home advisor, research mentor, and student should have a Skype chat to discuss the knowledge and skills the student should have and to come to an agreement on what the student will do when he/she arrives.
- Students should have additional knowledge, skills and academic preparation to fully participate in this type of research experience. Identify “qualifications” that are most important when selecting research abroad students. Match students’ levels of knowledge and skills with prospective research sites.
- International partners should be encouraged to acquire supplementary institutional or external funding to support the reciprocal exchange of non-US students. Mentors suggest that if funding is not found to support students that other incentives be devised to encourage continued participation by international partners.



### From the NANOGrav-PIRE meeting and focus groups

- Prior to future meetings ask each working group to select a few key papers related to upcoming workshop/meeting topics. Post links to the papers on the meeting agenda next to the corresponding presentation. Post meeting agenda and papers on the NANOGrav-PIRE website.
- Meeting participants of all levels would like additional science content to be presented.
- Structure presentations more carefully and stay on schedule.
- Videotape faculty talks, student tutorials and explanations of how to conduct specific exercises (ie. timing exercises).
- Create a page on the PIRE website for instructional material with links to tutorials, instructional videoclips, webcasts, and papers
- Undergraduate and graduate students request more information and made many excellent suggestions and requests that will improve project implementation and increase impact on participants.

### General recommendations

- International members want to be more fully included
- Working group leaders should follow the developed template to write their annual report.
- Complete benchmark and timeline charts. Include a needs or “to do” list at the bottom of each benchmark chart.



## UPCOMING EVALUATION ACTIVITIES FOR QUARTER 4

- Conduct annual post-survey of all PIRE project participants
- Analysis of working group reports and progress made towards achievement of annual benchmarks
- Attendance at the International Science Meeting in Morgantown, West Virginia