

## Outreach and Diversity Activities

IUCF has a number of ways in which we establish contact with undergraduates at various universities and students in the public school system in order to make them aware of the opportunities for future careers in the physical sciences, and nuclear physics in particular. On separate pages are summaries of the activities on the Research Experience for Undergraduates program and a list of the numbers of graduate and post-doctoral students associated with work at IUCF, along with a list of the Ph.D. degrees awarded during FY2003.

In FY2003, IUCF established a Diversity Committee to address the problem of getting a larger representation of women and minorities working in the nuclear physics group. The main focus of this effort is targeted recruitment. For the Indiana University Physics Department, the highest priority issue is a larger representation at the faculty level. This spring (FY2004), the Physics Department plans to make offers for new hires in both nuclear and accelerator physics. Discussions have been started with two female candidates for the position in accelerator physics. For minority (including female) candidates, it is also possible to obtain additional assistance from the university to underwrite new positions. We are currently investigating a possible female candidate in nuclear physics who would be eligible as such a special opportunity. The number of female post-doctoral students supported by the grant has been increased from one to three. Renee Fatemi is in her third year working on STAR. We have added Joanna Kuros-Zolnierczuk to work on Cooler three-body physics analysis and, most recently, Anna Micherdzinska to work on the charge symmetry violation and neutron parity violation experiments. In FY2003, we had two female graduate students, and we successfully recruited one more who will begin research in January 2004.. (In a related development, two Black/African American graduate students were accepted into the newly formed medical physics program.) An increase in minority (and female) representation at all levels is important as these people become role models for others considering careers in science. One of the tasks of the Diversity Committee will be to monitor the progress of these representatives from minority groups to make sure that their experience at IUCF is positive and that they receive any assistance and encouragement that they may need to succeed.

One important outreach effort for IUCF this past year has been through summer jobs for undergraduate students. This past summer, 13 such positions were created across IUCF, including medical physics, the low energy neutron source, and radiation effects. Of the four students hired by nuclear physics, one was female and another was black. Like the REU program, these jobs bring students into contact with science in a research environment and let them meet people who are making science their career.

Faculty from nuclear physics also participate in activities aimed directly at students in the high schools. Every year, the Physics Department sponsors an Open House on a Saturday with science-related activities. Many students arrive by bus from areas around southern Indiana to participate. We also send faculty into the local high schools to discuss careers in science.

The laboratory is made available for tours whenever the running schedule allows. A large fraction of these tours involve classes from public schools in southern Indiana, as well as various local civic groups. We view this as an opportunity for the public to see the facilities available at the Cyclotron Facility and to be aware of the role we play in the community.

Many of these outreach activities have happened in a unsystematic way across the Indiana University College of Arts and Sciences. At IUCF we are gathering information on the diversity efforts of our staff and faculty members and are in the process of setting up a database to track these efforts and subsequent results. This fall, we at IUCF took the initiative to gather representatives of the various efforts from around the university into a single meeting to discuss common goals and how we might present science in higher education with greater impact. With sponsorship from the LENS project, this workshop included a presentation from John McDonald of the University of Alberta on the ALTA distributed cosmic ray project. This project involves detectors placed at schools across the continent to search for high-energy cosmic ray showers. A similar Indiana project involving seismic stations was presented by the Geology Department. Such efforts can involve students across all their high school years and bring them into contact with an active area of scientific research. One point that emerged from the discussion was the need to partner with experts in the field of education in order to determine reliable ways to assess the benefits of such programs. This is important as resources are often limited and it is important to know what techniques are effective.

Similar themes were discussed at the meetings to plan a Science and Technology Center proposal to be associated with the low energy neutron effort. In this particular case, two main focus efforts were identified. With help from Indiana nuclear physics faculty, the proposal will contain the development of new course materials in imaging, including X and gamma radiation as well as neutrons. These materials will be aimed at advanced undergraduates and masters level students across a number of the traditional science and engineering departments. There will also be a particular focus on a virtual environment in which the properties of the low energy neutron source (and perhaps its detection instruments) can be studied. The environment will be modular so that students can use it for specific projects associated with their course studies.