

RESEARCH EXPERIENCE FOR UNDERGRADUATES

Andrew D. Bacher

Indiana University Cyclotron Facility, Bloomington, IN 47408

Each year the Research Experience for Undergraduates (REU) program at the Indiana University Cyclotron Facility brings 14 undergraduates to Bloomington for a 10-week program involving a major research project, lectures, a machine shop course, lessons in scientific computation, and social activities. Its aim is to introduce promising students to a research environment with the hope that they will be encouraged to pursue a career in the sciences. Students are placed with advisors, usually selected from the staff of the Cyclotron Facility or the Nuclear Theory Center, who supervise them in special projects during the course of the summer. This summer, additional NSF funds allowed 2 of our REU students to work on research projects at the Research Center for Nuclear Physics (RCNP), a sister institution to IUCF and Indiana University, located at Osaka University in Japan. They spent 8 weeks in Japan working on special projects under the supervision of RCNP staff and experiencing both the international nature of the scientific community and richness of the Japanese culture. This summer, we also had a high school student from Evansville, Indiana working at IUCF on a neutrino detector project for Fermilab.

The students from the summer, 2002 program are listed below, along with their home institutions, project titles, and advisors.

Kirk Bays, Oregon State University

"Geometry of Lead Glass Detectors in the Experimental Search for $d + d \rightarrow {}^4\text{He} + \pi^0$ at IUCF"

Advisors: Mark Pickar (IUCF and MSU) and Andrew Bacher

Charles Chretien, Worcester Polytechnic Institute

"Construction and Testing of a Wobbler Magnet for Proton Therapy"

Advisor: Vladimir Anferov

Dan Duggan, Indiana University (Bloomington)

"Studies of Electron Motion in Two Dimensions, with Applications to Condensed Matter Physics"

Advisors: Tim Londergan and David Murdock (IUNTC and Tennessee Tech)

Joel Griffith, University of the South

"Development of an Imaging Near-Neutrino Detector for Fermilab"

Advisors: Rex Tayloe and John Olmsted

Gavin Hall, University of Oregon

"Magnetic Field Gradient Mapping and Applications to Transport of Polarized ${}^3\text{He}$ "

Advisor: Mike Snow

Christopher Herman, The Ohio State University

"The rp-process and States in ${}^{22}\text{Mg}$ between the 8.14 MeV Alpha-Threshold and 11 MeV"

Advisors: Georg Berg (RCNP and IUCF) and Kichiji Hatanaka (RCNP)

Brian Jennings, John Carroll University
"Investigations of the Glueball Spectrum"
Advisor: Adam Szczepaniak

Matt Kay, Wabash College
"Cosmological Models and the Nature of the Dark Energy"
Advisor: Mike Berger

Veronique Lefebvre, Universite Marseille, France
"Three Dimensional Simulation for Treatment Planning in Proton Therapy"
Advisor: Nick Schreuder

Lisa Leslie, Truman State University
"The Effects of Proton Bombardment on the Electrical Properties of Kapton"
Advisors: Mircea Chipara and Charles Foster

Eric Levy, Swarthmore College
"Proton Decay of the Isoscalar Giant Dipole Resonance"
Advisor: Mamoru Fujiwara (RCNP)

Joshua Rembaum, University of California (Berkeley)
"Design of a Beam Intensity Modulation System for the MPRI Ion Source"
Advisor: Vladimir Derenchuk

Jay Tasson, Northern Michigan University
"Magnetic Shielding for an Experiment to Measure the Neutron-⁴He Weak Interaction"
Advisor: Mike Snow

Reiko Toriumi, Indiana University (Bloomington)
"Testing a Silicon Ring Detector for Projectile Breakup Experiments"
Advisor: Romualdo De Souza