

## EXECUTIVE SUMMARY OF PHYSICS DEPARTMENT ANNUAL REPORT 1999-2000

**Jerzy Bernholc** was appointed Drexel Professor of Physics. **Jaqueline Krim** was elected a fellow of the American Physical Society and a fellow of the American Vacuum Society. **John Hubisz** was elected Vice President of the American Association of Physics Teachers. **David Haase** received the NC Science Teachers Association distinguished Service Award. **John Blondin** was elected to the NC State Academy of Outstanding Teachers. **Stephen Reynolds** was elected Alumni Distinguished Undergraduate Professor. **Chris Gould** was the College nominee for the UNC Board of Governors Award for Excellence in Teaching. **Chueng Ji** received a Hewlett Fellow certificate.

Among graduate students, **Felipe Llanes-Estrada** and **Ted Horton** were awarded competitive one-year SURA/Jefferson Graduate Fellowships for 99-00. **Kristy Dyer** continues to receive a competitive NASA/Goddard graduate student fellowship. **Kimberly Bell** won an American Vacuum Society Graduate Research award. **Miklos Kiss** continues to receive a competitive USAMRMC medical physics fellowship. **Stephen Lokitz** represented NC State University at the US Department of Energy sponsored Nobel Laureates' meeting in Lindau, Germany. **Undraa Agvaanluvsan** was awarded an NC State University International Graduate Fellowship for 2000. **Stephen Lokitz** was named "an Outstanding teaching Assistant" by the American Association of Physics Teachers. **David Pearson** served as President of the Graduate Physics Student Association.

Among undergraduates, **Michael Binger** was one of three finalists for the 2000 LeRoy Apker undergraduate research Prize of the American Physical Society. The 2000 winner of the Rodney I McCormick prize for undergraduate research in Physics at NC State University was **Chad Mitchell** (adviser **Chueng Ji**) talking on "Light-Front Analysis of Quantum Chromodynamic Exclusive Processes". Eleven students presented posters afterwards at the Department's Undergraduate Research Symposium. **Dargan Frierson** (adviser **John Blondin**) was the winner of both the College Scholarly Achievement award and the College Research award. **Jaqueline Jones** served as President of the Society of Physics Students chapter.

The Department awarded 6 BA, 13 BS, 1 MS and 9 PhD degrees.

The Department published 147 papers in journals, 29 in conference reports and gave 283 presentations at meetings, seminars and colloquia. Research highlights include a breakthrough technique in X-ray medical imaging (Dale Sayers et al), demonstration of the first ever digital camera sensitive only to ultraviolet light (Jan Shetzina et al), and a Nature article on a breakthrough in making thin-film polymer blends out of dissimilar materials (Harald Ade et al). The Department continues to rank second on campus in the Library's author publication database.

Four workshops were organized by Departmental faculty: a Sigma Xi workshop on "Transforming Undergraduate Education" (**Robert Beichner and John Blondin**); an international workshop on "Fundamental Physics with Pulsed Neutron Beams" (**Chris Gould, Gary Mitchell and David Haase**); a campus planning workshop on "Frontiers of Nanotechnology" (chair, **Jackie Krim**); and a strategic planning workshop on research directions for the Polymer Science Center (co chair, **Harald Ade**).

The Department's introductory physics program ranked ninth largest out of 762 in the American Institute of Physics 1998 enrollment report (R394.5). Student credit hours for Fall99 were 11247, up 2.5% over Fall99. Laboratory enrollment was 4438 for the academic year, an increase of 4.5%. Visits to the Physics Tutorial Center were steady at 10130 for the academic year. The Demonstration Room Facility handled 3081 requests for the academic year, up 13% over the previous year.

Students are positive about the instruction: 74.7% responded yes to "I find this course to be generally

satisfactory", and 77.6% responded yes to "I would recommend this instructor to other students". For the calendar year 1999, Webassign graded 1.2 million homework assignments on campus (9130 students in 186 classes and 189 instructors in the Fall alone), in mathematics, physics, chemistry, computer science, statistics, management, agriculture, textiles, humanities and forestry. Off campus during 1999 an additional 12000 students were served in 204 colleges, high schools, and universities including NC A&T University, Weston High School and Northeastern University. The collaborative work environment in SCALEUP classes continues to have an impact on success rates for students in introductory engineering physics: a factor of three improvement for women students and a factor of four improvement for minority students.

The 1999 L.H. Thomas speaker was **Horst Stormer**, 1979 Nobel prize winner from Columbia University. His talk was cosponsored by SAS and included a presentation to students at Cary Academy. The 2000 John Derieux lecturer was **Robert Kirshner** from Harvard University. His presentation included a talk to students at Southeast High School.