



Physics

Department of Physics
COLLEGE OF ARTS AND SCIENCES

KEY STRENGTHS

- United States Department of Energy grant enables students to perform research on and off campus. Grants have totaled more than \$2.8 million in the past 25 years. ACU undergraduates have been co-authors on over 70 published papers in the past 15 years, which have been cited in other publications over 4,300 times. Fifteen of these papers have been cited over 100 times and three of those have been cited over 250 times. Ten ACU undergraduates co-authored the Relativistic Heavy Ion Collider PHENIX paper, published along with papers from the other three RHIC experiments, that announced the discovery of the quark-gluon plasma.
- Graduates represent a wide range of careers in teaching (college and high school), medicine, U.S. Navy nuclear programs, small and large industries and national labs.

POINTS OF EXCELLENCE

- Each summer several students are involved in research. In the past 15 years, ACU undergraduates have co-authored papers that have been cited by other articles more than 1,400 times.
- Every student in the past who applied to graduate school was accepted by at least one of their top choices.

DEGREE OFFERED

- Bachelor of Science in Physics

MAJORS AVAILABLE

- Applied Physics (PHYA)
- Computational Physics (PHYC)
- Engineering Physics (PHYN)
- Physics (PHYS)

CAREER OPPORTUNITIES

- Aerospace industries
- Applied physics
- Computational Science
- Computer and telecommunications industries
- Computer science
- Graphics and computer applications
- High school and university professors
- Medical doctors/researchers

- National research laboratories
- Oil production corporations
- Patent law
- Policy and decision-making companies
- Research institutions
- Semiconductor Industry
- Science communication

STUDENT OPPORTUNITIES

Off-campus summer research opportunities

- Brookhaven, Upton, N.Y.
- Fermilab, Batavia, Ill.

On-campus departmental opportunities

- Departmental lab teaching assistant
- Departmental research
- Participate in publications in peer-reviewed journals
- Present research papers at professional physics meetings

Scholarships available

- ACT/SAT Academic Scholarships

Please consult with your admissions counselor for details on these and other scholarships available to you.

FACILITIES

The Department of Physics is located in the four-story Foster Science Building, which boasts a spacious electronically equipped lecture room tiered for maximum effectiveness, seven modern laboratories, two research areas, a small machine shop and an observatory with computer-guided telescope with a CCD camera.

The laboratories and research areas include numerous computers for use by majors and student researchers, including a LINUX cluster assembled and managed by our students, along with software for computational physics, such as MATLAB and FEMLAB. Another laboratory supports research activities in nuclear and particle physics.

DEMOGRAPHICS

Majors in the 2006-07 school year: 50

2006-07 graduates with jobs by commencement:
100 percent

2006-07 graduates employed or admitted into graduate/professional school by graduation:
100 percent

2006-07 graduates who applied to graduate/professional school accepted: 100 percent

DISTINGUISHED ALUMNI

Tyson Browning, class of 1993; Massachusetts Institute of Technology, Ph.D., 1999; Lockheed-Martin, Fort Worth, Texas; Texas Christian University, associate professor, Fort Worth, Texas.

Alan Bradshaw, class of 1990; Ph.D., 1996; director of biomagnetism research, Vanderbilt University, Nashville, Tenn.; received the President's Plenary Award from the American Gastroenterological Association in 1997; received the Young Investigator's Award from the American Motility Association in 1996.

Vickie (McVeigh) Erkkila, class of 1989; physics and chemistry teacher, Pepperdine University, Malibu, Calif.

Kaleen Graessle, class of 1985; physics teacher, Brentwood Christian School, Austin, Texas.

Scott Acton, class of 1984; Ph.D., 1990; Keck Observatory, Mauna Kea, Hawaii.

Mike Ballard, class of 1983; senior research and development engineer for computer aided designs, General Dynamics, Weatherford, Texas.

Thad Walker, class of 1983; Ph.D., 1988; professor of physics, University of Wisconsin, Madison, Wis.

Allan Rose, class of 1981; Ph.D., 1986; National Institute of Standards, Boulder, Colo.

Jeff Kimble, class of 1971; Ph.D., 1978; professor of physics, California Institute of Technology, Pasadena, Calif.

RECENT GRADUATES

Erin Wilson Connally, class of 2005, The University of Washington Dental School, Seattle, Wash.

Chris Thompson, class of 2005, The University of Texas Health Sciences Center (medicine), Houston, Texas.

Jim Drachenberg, class of 2004; graduate studies (physics), Texas A&M University, College Station, Texas.

Clifton Engle, class of 2003; Uniformed Services University of the Health Sciences, School of Medicine, Bethesda, Md.

Melissa Travis Jerkins, class of 2003, The University of Texas at Austin, graduate studies (physics), Austin, Texas.

Michael Daugherty, class of 2002; graduate studies (nuclear physics), The University of Texas at Austin, Austin, Texas.

Jebidiah Qualls, class of 2002; graduate studies (physics), The Pennsylvania State University, University Park, Pa.

Nathan Longbotham, class of 2001; graduate studies (optics), University of New Mexico, Albuquerque, N.M.

Clayton Nunnally, class of 2001; graduate studies (applied physics), University of Virginia, Charlottesville, Va.

Andy Brown, class of 2000; Ph.D., 2006 (optics), University of Arkansas, Fayetteville, Ark.

John Keyser, class of 1994; Ph.D., 2000, North Carolina State University, Raleigh, N.C.; assistant professor, Texas A&M University, College Station, Texas.

DEPARTMENTAL ACHIEVEMENTS

- **Dr. Paul Morris** has played a major role in the creation of ACU's philosophy program. He spent the 2001-02 school year on sabbatical leave at the University of Notre Dame doing research in philosophy of science, mathematics and religion and working on texts in this field and in quantum mechanics.
- **Dr. Michael Sadler** was awarded a Fulbright fellowship from the U.S. Department of State in 2003 to work for five months at the Petersburg Nuclear Physics Institute in Gatchina, Russia.
- **Dr. Michael Sadler** has been honored nationally by the American Physical Society for research at an undergraduate institution.
- **Dr. Michael Sadler** and **Dr. Donald Isenhower** have co-authored more than 100 papers.
- Papers with **Dr. Donald Isenhower** as co-author have been cited more than 2,200 times in other scientific papers.

- **Dr. Michael Sadler** and **Dr. Donald Isenhower** had sabbatical appointments at Brookhaven National Laboratory in 1998.
- **Dr. Paul Schulze (Emeritus)** was elected president of the American Association of Physics Teachers, Texas Section, for 1999-2000.
- **Dr. Rusty Towell** has joined the particle physics group in the Department of Physics.
- Four physics department students have been awarded the prestigious national Barry M. Goldwater Scholarship.
- Physics faculty members have received numerous research grants, including a continuing grant from the U.S. Department of Energy for particle research. As of 2007, these have totaled over \$2.5 million. Fewer than 80 universities in the nation have DOE nuclear physics grants.
- Faculty members have been invited to participate in symposiums in the Russian Republic, Germany, Finland, France and Switzerland as well as in the U.S.
- Students have presented numerous papers at regional physics meetings and have won numerous awards, including presenting posters at Division of Nuclear Physics of the American Physical Society. Five students were sent to the 1998 meeting in Santa Fe, N.M., four to the 1999 meeting in Asilomar, Calif., nine to the 2000 meeting in Williamsburg, Va. (no other university had more than three students presenting research), three to the 2001 meeting in Maui, Hawaii, five to the 2003 meeting in East Lansing, Mich., and eight to the 2004 meeting in Tuscon, Ariz.
- Students have conducted research and presented papers in the Russian Republic.
- Undergraduate students have co-authored several peer-reviewed papers published in major physics journals. Four of these has been cited more than 100 times in other scientific papers. Twenty-one papers have been cited more than 10 times.

FACULTY

Jeff E. Arrington, Ph.D., *associate professor, assistant provost for student learning and associate dean of campus life*; B.S., ACU, 1982; M.E.E.E., The University of Utah, 1984; E.E., The University of Utah, 1986; Ph.D., The University of Utah, 1989; collaborator, National Tsing Hua University, Hsinchu, Taiwan, 1989-91, and Los Alamos National Laboratory, 1991-95.

Timothy Head, Ph.D., *assistant professor*; B.S., Texas Tech University, 2000; Ph.D., University of Illinois, 2007.

Donald Isenhower, Ph.D., *professor*; B.S., ACU, 1981; Ph.D., Iowa State University, 1986; visiting scientist, Ames Laboratory, 1987; NATO post-doctoral fellow, European Organization for Nuclear Research (CERN), 1990-91; visiting scientist, Brookhaven National Laboratory, 1998.

Paul E. Morris, Ph.D., *professor, chair*; B.S., ACU, 1966; Ph.D., Texas Christian University, 1971; Lubbock Christian University, 1971-75; visiting scholar, University of Notre Dame, 1992-93, 2001-02.

Michael E. Sadler, Ph.D., *professor*; B.S., Texas Tech University, 1971; M.S., Indiana University, 1974; Ph.D., Indiana University, 1977; research assistant, Indiana University Cyclotron Facility, 1974-77; research physicist, The University of California at Los Angeles, 1977-80; spokesperson for E913, Brookhaven National Laboratory, 1993-present; visiting scientist, Brookhaven National Laboratory, 1998.

Rusty Towell, Ph.D., *associate professor*; B.S., ACU, 1990; Ph.D., The University of Texas at Austin, 1999; faculty of Naval Nuclear Power School, 1990-94; post-doctoral study at Los Alamos National Laboratory, 1999-2001.

Joshua Willis, Ph.D., *assistant professor*; B.S., ACU, 1997; Certificate of Mathematics, Cambridge University, 1998; Ph.D., The Pennsylvania State University, 2004; post doctoral study, University of Western Ontario, 2006.

FOR MORE INFORMATION

About the Department

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