THE UNIVERSITY OF ALABAMA

DEPARTMENT OF PHYSICS AND ASTRONOMY

Tuscaloosa, Alabama 35487-0324
http://physics.ua.edu

General University Information

President: Stuart Bell
Dean of Graduate School: Susan Carvalho
University website: http://www.ua.edu
School Type: Public
Setting: Suburban
Total Faculty: 1,435
Total Graduate Faculty: 1,005
Total number of Students: 38,563
Total number of Graduate Students: 5,258

Department Information

Department Chairman: Prof. Patrick R. LeClair, Chair
Department Contact: Nancy Pekera, Administrative Secretary
Total full-time faculty: 31
Total number of full-time equivalent positions: 31
Full-Time Graduate Students: 59
Female Full-Time Graduate Students: 11
First-Year Graduate Students: 16
Female First-Year Students: 7
Total Post Doctorates: 12

Department Address

514 University Boulevard
Tuscaloosa, AL 35487-0324
Phone: (205) 348-5050
Fax: (205) 348-5051
E-mail: npekera@ua.edu
Website: http://physics.ua.edu

ADMISSIONS

Admission Contact Information

Address admission inquiries to: Graduate School Office, Box 870118, Tuscaloosa, AL 35487-0118
Phone: (877) 824-7237
E-mail: graduate.school@ua.edu
Admissions website: http://graduate.ua.edu/prospects/application/

Application deadlines

Fall admission:
U.S. students: January 15 *Int'l. students*: January 15
Spring admission:
U.S. students: November 1 *Int'l. students*: June 1

Application fee

U.S. students: $65 *Int'l. students*: $80
Admissions are considered after the deadlines if positions are available. Full consideration is only guaranteed if the deadlines are met.

Admissions information

For Fall of 2017:
Number of applicants: 131
Number admitted: 27
Number enrolled: 15

Admission requirements

Bachelor's degree requirements: Bachelor's degree in Physics is required.
Minimum undergraduate GPA: 3.0

GRE requirements

The GRE is required.

Subjective GRE requirements

The Subjective GRE is not required.

TOEFL requirements

The TOEFL exam is required for students from non-English-speaking countries.
PBT score: 550
iBT score: 79

Other admissions information

Undergraduate preparation assumed: Halliday and Resnick, Fundamentals of Physics; Serway, Moses, and Moyer, Modern Physics; Symon, Mechanics; Reitz, Milford, Foundation of Electromagnetic Theory; Eisberg, Resnick, Quantum Physics of Atoms; etc.

TUITION

Tuition year 2018–19:
Tuition for in-state residents
Full-time students: $5,390 per semester
Tuition for out-of-state residents
Full-time students: $14,615 per semester
Credit hours per semester to be considered full-time: 9
Deferred tuition plan: Yes
Health insurance: Available at the cost of $1,248 per year.
Academic term: Semester
Number of first-year students who received full tuition waivers: 15

Teaching Assistants, Research Assistants, and Fellowships

Number of first-year
Teaching Assistants: 15
Fellowship students: 5
Average stipend per academic year
Teaching Assistant: $18,747
Research Assistant: $18,747
Fellowship student: $18,747
All first year students have guaranteed support for their first two semesters.

FINANCIAL AID

Application deadlines

Fall admission:
U.S. students: February 15 *Int'l. students*: February 15
Spring admission:
U.S. students: November 1 *Int'l. students*: June 1

Loans

Loans are available for U.S. students.
Loans are available for international students.
GAPSFAS application required: No
FAFSA application required: No

For further information

Address financial aid inquiries to: Office of Student Financial Aid, Box 870162, 106 Student Services Center, The University of Alabama, Tuscaloosa, AL 35487.
Phone: (855) 469-2262
E-mail: financialaid@ua.edu
Financial aid website: http://financialaid.ua.edu/

HOUSING

Availability of on-campus housing

Single students: No
Married students: No
Childcare Assistance: No

For further information

Address housing inquiries to: Julie Elmore, Assistant Director for Off-Campus Housing.
Phone: 205-348-9647
E-mail: offcampushousing@sa.ua.edu
Housing aid website: https://offcampushousing.ua.edu

Table A—Faculty, Enrollments, and Degrees Granted

Research Specialty	2017–18 Faculty	Enrollment Fall 2017		Number of Degrees Granted 2017–18 (2013–18)		
		Master's	Doctorate	Master's	Terminal Master's	Doctorate
Astronomy	5	–	10	–(8)	2(4)	2(5)
Astrophysics	2	–	4	–(4)	1(2)	–(2)
Condensed Matter Physics	10	–	25	–(13)	–(4)	3(14)
Engineering Physics/Science	–	–	4	–	–	–
Experimental particle physics	2	–	6	–(4)	–(2)	1(3)
Theoretical particle physics	10	–	8	–(8)	–(1)	2(7)
Other	–	–	2	–	–	–
Total	29	2	59	–(37)	3(13)	8(31)
Full-time Grad. Stud.	–	–	59	–	–	–
First-year Grad. Stud.	–	–	15	–	–	–

GRADUATE DEGREE REQUIREMENTS

Master's: Plan I: 24 graduate semester hours in an approved program with satisfactory performance required; "B" average; one semester in residence; master's examination required; thesis required; no language requirement. Plan II: 30 graduate semester hours in an approved program with satisfactory performance required; master's examination required; thesis not required; no language requirement.

Doctorate: A minimum of 48 graduate semester hours required in an approved program with satisfactory performance; one academic year in residence required; oral preliminary examination required; dissertation and dissertation examination required.

Thesis: Thesis may be written in absentia.

SPECIAL EQUIPMENT, FACILITIES, OR PROGRAMS

The Dept. of Physics and Astronomy at the University of Alabama are members of the SARA Telescope consortium, which operates a 0.9 meter telescope at Kitt Peak in Arizona, a 0.6 meter telescope at Cerro Tololo in Chile and a 1.0 meter telescope in La Palma, Canary Islands, Spain. The astronomy group at UA is a member of Galaxy Zoo, the Sloan Digital Sky Survey (SDSS) IV, the VERITAS and CTA gamma ray observatories, and the IceCube Neutrino Observatory at the South Pole. The experimental particle physics group at UA is a member of CMS experiment at CERN's Large Hadron Collider, the LZ direct Dark Matter detection experiment, the MoEDAL experiment at CERN, and the EXO-200 and nEXO neutrino experiments.

Condensed matter work is facilitated by two clean rooms. Several sputtering systems are available for sample synthesis. Characterization equipment includes alternating-gradient and superconducting vibrating-sample magnetometers, as well as scanning and transmission electron microscopes, scanning atomic force and tunneling microscopes, and Auger and x-ray photoelectron spectroscopy.

On site facilities further include well-equipped laboratories for research in condensed-matter physics, high-energy physics, and image processing.

Supporting facilities include a machine shop, electronics shop, computer workstations, and direct access to the campus mainframe computer and the Alabama supercomputer. Faculty and students participate in the Center for Materials for Information Technology and the Tri-Campus Material Science Ph.D. Program.

Table C—Separately Budgeted Research Expenditures by Research Specialty

Research Specialty	No. of Grants	Expenditures ($)
Astronomy	18	$1,946,210
Astroparticle physics	4	$183,090
Condensed Matter Physics	30	$4,664,210
Experimental particle physics	29	$2,570,980
Theoretical particle physics	9	$262,000
Total	90	$9,626,490

FACULTY

Professor

Busenitz, Jerome K., Ph.D., University of Illinois, 1985. *High Energy Physics, Particles and Fields*. Experimental elementary particle physics.

Buta, Ronald J., Ph.D., University of Texas, Austin, 1984. *Astronomy*. Galaxy morphology and catalogs.

Harms, Benjamin C., Ph.D., Florida State University, 1969. *Particles and Fields*. Theoretical particle physics.

Keel, William C., Ph.D., University of California, Santa Cruz, 1982. *Astronomy*. Galactic nuclei, jets, and galaxy interactions.

LeClair, Patrick R., Ph.D., Eindhoven University of Technology, 2002. *Condensed Matter Physics, Materials Science, Metallurgy*. Experimental condensed matter physics.

Mankey, Gary J., Ph.D., Pennsylvania State University, 1992. *Condensed Matter Physics*. Experimental condensed matter physics.

Mewes, Tim, Ph.D., University of Kaisersleutern, 2002. *Condensed Matter Physics*. Experimental condensed matter physics.

Piepke, Andreas, Ph.D., Heidelberg University, 1990. *High Energy Physics, Particles and Fields*. Experimental elementary particle physics.

Sarker, S. K., Ph.D., Cornell University, 1980. *Condensed Matter Physics*. Theoretical condensed matter physics.

Schad, Rainer, Ph.D., University of Hannover, 1991. *Condensed Matter Physics*. Experimental condensed matter physics.

Stancu, Ion, Ph.D., Rice University, 1990. *High Energy Physics, Particles and Fields*. Experimental elementary particle physics.

Stern, Allen, Ph.D., Syracuse University, 1980. *Particles and Fields*. Theoretical particle physics.

White, Raymond E., Ph.D., University of Virginia, 1986. *Astronomy, Astrophysics*. Dynamics and hydrodynamics in galaxies and galaxy clusters.

Williams, Dawn R., Ph.D., University of California, Los Angeles, 2004. *Astrophysics, Particles and Fields*. Experimental particle astrophysics.

Associate Professor

Bailin, Jeremy, Ph.D., University of Arizona, 2004. *Astronomy, Astrophysics*. Galaxy formation and evolution.

Henderson, Conor, Ph.D., Massachusetts Institute of Technology, 2005. *High Energy Physics, Particles and Fields*. Experimental elementary particle physics.

Irwin, Jimmy, Ph.D., University of Virginia, 1997. *Astronomy, Astrophysics*. Accreting black holes and neutron stars.

Mewes, Claudia K.A., Ph.D., University of Kaiserslautern, 2004. *Condensed Matter Physics*. Theoretical condensed matter physics.

Okada, Nobuchika, Ph.D., Tokyo Metropolitan University, 1998. *Cosmology & String Theory, Particles and Fields*. Physics beyond the standard model.

Rumerio, Paolo G., Ph.D., Northwestern University, 2003. *Particles and Fields*. Experimental elementary particle physics.

Townsley, Dean M., Ph.D., University of California, Santa Barbara, 2004. *Astrophysics*. White dwarf supernovae.

Assistant Professor

Araujo, Paulo T., Ph.D., Universidade Federal de Minas Gerais, 2010. *Condensed Matter Physics, Nano Science and Technology*. Experimental condensed matter physics.

Hauser, Adam, Ph.D., Ohio State University, 2010. Experimental condensed matter physics. *Condensed Matter Physics*. Experimental condensed matter physics.

Kaminski, Matthias, Ph.D., Ludwig-Maximilians University, 2008. *High Energy Physics, Particles and Fields*. string theory, AdS/CFT correspondence, numerical gravity, quantum field theory.

Nair, Preethi, Ph.D., University of Toronto, 2009. *Astronomy*. Galaxy formation and evolution, using large astronomical surveys.

Ostrovskiy, Igor, Ph.D., University of Alabama, 2011. *High Energy Physics, Particles and Fields*. Experimental elementary particle physics.

Santander, Juan M., Ph.D., University of Wisconsin-Madison, 2013. *Astrophysics, Particles and Fields*. Experimental particle astrophysics.

Schwiete, Georg, Ph.D., University Bochum, 2004. *Condensed Matter Physics*. Theoretical condensed matter physics.

Tse, Wang-Kong, Ph.D., University of Maryland, 2008. *Condensed Matter Physics*. Theoretical condensed matter physics.

Professor Emeritus

Alexander, Chester, Ph.D., Duke University, 1968. *Condensed Matter Physics*. Experimental condensed matter and chemical physics.

Butler, William H., Ph.D., University of California, San Diego, 1969. *Condensed Matter Physics*. Theoretical condensed matter physics.

Byrd, Gene G., Ph.D., University of Texas, Austin, 1974. *Astrophysics*. Theoretical astrophysics.

Clavelli, Louis J., Ph.D., University of Chicago, 1967. *Particles and Fields*. Theoretical particle physics.

Coulter, Philip W., Ph.D., Stanford University, 1965. *Particles and Fields*. Theoretical particle physics.

Fujiwara, Hideo, Ph.D., University of Tokyo, 1969. *Condensed Matter Physics*. Experimental condensed matter physics.

Hardee, Philip E., Ph.D., University of Maryland, 1976. *Astrophysics*. Theoretical and observational astrophysics.

Harrell, J. W., Ph.D., University of North Carolina, Chapel Hill, 1969. *Condensed Matter Physics*. Experimental condensed matter physics.

Jones, Stanley T., Ph.D., University of Illinois, 1970. *Physics and other Science Education*. Physics education.

Sulentic, Jack W., Ph.D., SUNY, Albany, 1975. *Astronomy*. Observational astrophysics.

Tipping, Richard H., Ph.D., Pennsylvania State University, 1969. *Atomic, Molecular, & Optical Physics*. Theoretical physics; molecular spectroscopy.

Visscher, Pieter B., Ph.D., University of California, Berkeley, 1971. *Condensed Matter Physics*. Theoretical condensed matter physics; computer simulation.

Adjunct Professor

Biermann, Peter L., Ph.D., University of Gottingen, 1971. Theoretical astrophysics.

Crocker, Deborah A., Ph.D., University of Virginia, 1987. Observational astrophysics.

Gupta, Arunava, Ph.D., Stanford University, 1980. Experimental condensed-matter physics.

Pandey, Raghvendra K., Ph.D., University of Cologne, 1967. Experimental condensed matter physics.

DEPARTMENTAL RESEARCH SPECIALTIES AND STAFF

Theoretical

Astrophysics. Galactic dynamics; galaxy formation; galactic structure; extragalactic astronomy; high-energy astrophysics; stellar evolution; supernovae. Bailin, Biermann, Townsley.

Condensed Matter Physics. Electronic structure of solids; magnetic properties; hierarchical and renormalization-group methods; magnetic lattice models. Butler, Claudia Mewes, Sarker, Schwiete, Tse, Visscher.

High Energy Physics. Harms, Kaminski, Okada, Stern.

Particles and Fields. Supersymmetry phenomenology; field theory; quantum black holes; particle astrophysics. Biermann, Harms, Kaminski, Okada, Stern.

Experimental

Astronomy. Black holes; galaxy evolution; galaxy morphology; spectroscopy of AGN; galaxy clusters; globular clusters; X-ray astronomy; X-ray binaries. Buta, Irwin, Keel, Nair, White.

Condensed Matter Physics. Magnetic materials and thin films; nanoparticles spintronics. Araujo, Gupta, Harrell, Hauser, LeClair, Mankey, Tim Mewes, Pandey, Schad.

High Energy Physics. Detector research and development; neutrino physics; particle astrophysics. Busenitz, Henderson, Ostrovskiy, Piepke, Rumerio, Santander, Stancu, Williams.

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