General University Information
President: V. Burns Hargis
Dean of Graduate School: Sheryl Tucker
University website: http://www.okstate.edu
Control: Public
Setting: Rural
Total Faculty: 1,400
Total Graduate Faculty: 1,300
Total number of Students: 20,000
Total number of Graduate Students: 5,000

Department Information
Department Chairman: Prof. Kaladi Babu, Head
Department Contact: Susan Cantrell, Administrative Associate
Total full-time faculty: 22
Total number of full-time equivalent positions: 22
Full-Time Graduate Students: 37
First-Year Graduate Students: 7
Female First-Year Students: 2
Total Post Doctorates: 3

Department Address
145 Physical Sciences II
Stillwater, OK 74078-3072
Phone: (405) 744-5796
Fax: (405) 744-6811
E-mail: susan.cantrell@okstate.edu
Website: http://www.physics.okstate.edu

ADMISSIONS

Admission Contact Information
Address admission inquiries to: Oklahoma State University, Department of Physics, ATTN: Graduate Coordinator, Stillwater, OK 74078.
Phone: (405) 744-5796
E-mail: physics.grad.coordinator@okstate.edu
Admissions website: http://www.physics.okstate.edu

Application deadlines
Fall admission:
U.S. students: February 1
Int'l. students: February 1

Application fee
U.S. students: $50
Int'l. students: $75

Admissions information
For Fall of 2016:
Number of applicants: 112
Number admitted: 13
Number enrolled: 8

Admission requirements
Bachelor’s degree requirements: Bachelor’s degree in Physics (or closely related field) required.
Minimum undergraduate GPA: 3.0

GRE requirements
The GRE is required.
There is no minimum score requirement.

Advanced GRE requirements
The Advanced GRE is not required.

The Physics Subject Test is strongly recommended, although not required.

TOEFL requirements
The TOEFL exam is required for students from non-English-speaking countries.
iBT score: 90
IELTS 7.0. Also, iBT Speaking Section score should be at least 19.

Other admissions information
Additional requirements: Three Letters of Reference.
All college transcripts.
One to two page Personal Statement.
Up to date CV.

TUITION

Tuition year 2016–17:
Tuition for in-state residents
Full-time students: $187 per credit
Tuition for out-of-state residents
Full-time students: $765 per credit
GTAs and GRAs are eligible for full waiver of all eligible tuition, up to the nominal limits of degree program (e.g. 30 credit-hours for the M.S.; up to 90 credit-hours for the Ph.D.). Credit hours per semester to be considered full-time: 6
Health insurance: Available.
Other academic fees: Approx. $170/crdt-hr.
Academic term: Semester
Number of first-year students who received full tuition waivers: 7

Teaching Assistants, Research Assistants, and Fellowships
Number of first-year
Teaching Assistants: 7
Average stipend per academic year
Teaching Assistant: $16,200
Research Assistant: $18,000
Typically, we recommend admission only if we intend financial support; thus, nearly all students are supported.

FINANCIAL AID

Application deadlines
Fall admission:
U.S. students: February 1
Int'l. students: February 1

Loans
Loans are available for U.S. students.
Loans are not available for international students.
GAPSFAS application required: Yes
FAFSA application required: No

For further information
Address financial aid inquiries to: Oklahoma State University, Graduate College, Stillwater, OK 74078.
Phone: (405) 744-6386
E-mail: grad-i@okstate.edu
Financial aid website: http://gradcollege.okstate.edu
OUAB

Availability of on-campus housing
Single students: Yes
Married students: Yes

For further information
Address housing inquiries to: Oklahoma State University, Residence Life Department, Stillwater, OK 74078.
Phone: (405) 744-5592
E-mail: reslife@okstate.edu
Housing aid website: http://reslife.okstate.edu

GRADUATE DEGREE REQUIREMENTS

Master’s: Twenty-four semester hours of approved physics courses plus 6 hours thesis. Options in: optics and photonics; medical physics. No language requirement. Last 8 semester hours and 21 total semester hours must be completed in residence. At least a "B" average is required. In addition, a “Professional” M.S. in Physics is offered as a 32 credit hour (Report) plan.

Doctorate: Ninety hours of approved courses (including thesis research) beyond Bachelor’s degree. Departmental preliminary exam required. Minimum 30 semester hours and one of last two years in residence. Qualifying exam and dissertation defense. No language requirement. At least a "B" average is required.

SPECIAL EQUIPMENT, FACILITIES, OR PROGRAMS

Materials Growth and Characterization Laboratory; Rubidium and sodium BEC labs; Solid State NMR; femtosecond spectroscopy; optical absorption and fluorescence spectroscopy, Radiation Dosimetry Laboratory, FTIR, Powder XRD Core Facility. Mendenhall Observatory (0.6 m RC robotic telescope); 3D Modeling lab, GPU Cluster and access to high performance computing facilities, high-energy physics electronics lab. The types of experimental techniques in progress include the following: photon correlation, Brillouin scattering, whispering gallery modes, nonlinear optics. The instrumentation includes a variety of solid-state, liquid, and gas lasers, nonlinear optical crystals autocorrelators, streak cameras, FTIR, optical multichannel analyzers, boxcar integrators, and signal averagers, along with the standard monochromators, spectrum analyzers, detectors, and cryogenic equipment required for conventional spectroscopy. U.S. ATLAS member institution in high energy physics. Physics, along with Electrical Engineering, participates in the multidisciplinary Ph.D. Photonics programs.

Table B—Separately Budgeted Research Expenditures by Source of Support

<table>
<thead>
<tr>
<th>Source of Support</th>
<th>Departmental Research</th>
<th>Physics-related Research Outside Department</th>
</tr>
</thead>
<tbody>
<tr>
<td>Federal government</td>
<td>$1,073,325</td>
<td></td>
</tr>
<tr>
<td>State/local government</td>
<td>$237,935</td>
<td></td>
</tr>
<tr>
<td>Non-profit organizations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Business and industry</td>
<td></td>
<td>$208,326</td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>$1,519,586</td>
<td></td>
</tr>
</tbody>
</table>

Table C—Separately Budgeted Research Expenditures by Research Specialty

<table>
<thead>
<tr>
<th>Research Specialty</th>
<th>No. of Grants</th>
<th>Expenditures ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biophysics</td>
<td>5</td>
<td>$293,500</td>
</tr>
<tr>
<td>Condensed Matter Physics</td>
<td>8</td>
<td>$866,581</td>
</tr>
<tr>
<td>High Energy Physics</td>
<td>4</td>
<td>$279,450</td>
</tr>
<tr>
<td>Optics</td>
<td>2</td>
<td>$80,055</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>19</td>
<td>$1,519,586</td>
</tr>
</tbody>
</table>

FACULTY

Professor


Agarwal, Girish, Ph.D., University of Rochester, 1969. Quantum Foundations. Quantum optics; nonlinear optics; quantum information science and foundations of quantum mechanics; surface optics-nanophotonics.


Bandy, Donna K., Ph.D., Drexel, 1984. Theoretical Physics. Theoretical laser physics; instabilities; nonlinear behavior; optical devices.

McKeever, Stephen W. S., Ph.D., University College of N. Wales (Bangor), 1975. Solid State Physics. Experimental solid-state physics; thermoluminescence; thermally stimulated polarization currents; radiation dosimetry; semiconductors.


Nandi, Satyanarayan, Ph.D., University of Chicago, 1975. High Energy Physics. Theoretical high-energy physics, grand unification, supersymmetry, extra dimensions, physics at LHC.


United States: Geographic Listing of Graduate Programs

Oklahoma


Associate Professor


Shull, Peter O., Ph.D., Rice University, 1982. Astronomy, Astrophysics. Supernova remnants, exoplanets, near-Earth asteroids.

Summy, Gilford, Ph.D., Griffith (Australia), 1995. Atomic, Molecular, & Optical Physics. BEC; quantum chaos; atom optics.


Assistant Professor

Borunda, Mario, Ph.D., Texas A&M, 2008. Computational Physics. Developing theoretical and computational techniques to model and analyze the transport properties of atomic, molecular, mesoscopic, and macroscopic systems.

Cho, Jongmin, Ph.D., University of Texas MD Anderson Cancer Center, 2014. Medical, Health Physics. Use of positron emission tomography (PET) for treatment verification and the use of gold nanoparticles (GNPs) and hybrid GNPs to enhance the effectiveness of proton radiotherapy.

Haley, Joseph, Ph.D., Princeton University, 2009. Particles and Fields. Experimentally particle physics using the ATLAS detector at CERN. Searching for new fundamental particles, such as vector-like quarks, and improving the identification of boosted top quarks and heavy bosons.

Emeritus

Dixon, G., Ph.D., University of Georgia, 1967. Physics.

Harmon, H. James, Ph.D., Purdue University, 1974. Biophysics; high-resolution high-speed optical spectroscopy; spectroscopy determination of enzyme kinetic intermediates; design of solid-state chemical sensors; photochemical reaction of porphyrins.


Martin, I., Ph.D., Iowa State University, 1967. Physics.


Wicksted, James P., Ph.D., City University of New York, 1983. Experimental solid-state physics; Raman and Brillouin scattering, nonlinear-optics, rare-earth doped glasses, nanomaterials.

Wilson, T., Ph.D., University of Florida, 1966. Theoretical physics; electronic structure of point defects.

Research Assistant Professor


Adjunct Professor

Ahmad, Salahuddin, Ph.D., University of Victoria, B.C., 1981. Medical Physics.


Adjunct Associate Professor


Adjunct Assistant Professor


DEPARTMENTAL RESEARCH SPECIALTIES AND STAFF

Theoretical


Condensed Matter Physics. Electronic structure of disordered systems; density functional theory, low-dimensional materials, dielectric response theory; optical properties of defects; vibronics; semiconductor molecular beam epitaxy; transport in semiconductors and graphene; quantum Hall effect; application of quantum optimal control theory in solid-state semiconductor systems; solid-state quantum information. Borunda, Hauenstein, Mintmire.

High Energy Physics. Grand unification; supersymmetry; extra dimension; physics at LHC; fermion masses and mixings; neutrinos. The elementary particle theory group is focused on proposing tests for the theories within and beyond the standard model as they look at unification of forces within the context of supersymmetry, compactification of extra dimensions and string theory. Babu, Nandi.

Optics. Nonlinear behavior of laser systems; modeling of optical instabilities; quantum optics; nonlinear optics. Bandy.


Quantum Foundations. Decoherence; quantum optics of semiconductor dots; integrated structures and nanomechanical quantum devices; application and development of methods for electronic structure theory such as time-dependent density
functional theory, exact diagonalization, and Monte Carlo techniques; semiclassical connections between quantum and classical systems, with an interest in chaotic behavior. Borrunda.

Quantum Optics. Coherent control- Fano interference and electromagnetically induced transparency; super-resolution and quantum imaging, quantum entanglement; decoherence; quantum optics in integrated structures; quantum random walks, nanomechanical quantum devices; quantum plasmonics. Agarwal.


Experimental
Astrophysics. Supernova remnants; exoplanets; near-Earth asteroids. Shull.
Atomic, Molecular, & Optical Physics. Exploring the physics of antiferromagnetic spinor Bose-Einstein condensates with and without optical lattices, and their applications in quantum information science. Liu, Summy.
Biophysics. Laser effects on biological materials; high-resolution high-speed optical spectroscopy; enzyme kinetics; photochemical reactions of porphyrins; protein dynamics; protein structure; membrane proteins; amyloid proteins; solid-state NMR. Chen, Harmon, Xie, Zhou.
Chemical Physics. Photocatalysis; photoenergy conversion; monolayer surfaces; solid-state catalysts; photoreductive chemistry. Harmon.
Condensed Matter Physics. Optical, electrical, thermal, acoustical, structural, and mechanical properties of solids; laser materials; ESR; energy transfer; epitaxial growth, nanoparticles, and nanotubes. Harmon, Hauenstein, McKeever, Wicksted, Yukihara.
Fluids, Rheology. Light scattering; phase transitions in colloids; dynamics of flow systems. Ackerson.

High Energy Physics. The experimental high-energy physics group performs research with the ATLAS Experiment at CERN’s Large Hadron Collider. The group is involved in a wide range of physics analyses, from measurements of the top quark to searches for new physics beyond the Standard Model. Members of the group and involved in improving the identifications of jets that originate from b-quarks (b-tagging) and the identification of highly boosted top quarks and heavy bosons. The group is also involved in the research and development for the ATLAS pixel system. Members of the group developed the optical links and online monitoring software for the recent IBL upgrade of the new ATLAS pixel detector and the group will take a leading role in the development and construction of the electrical services for the ATLAS pixel system upgrades for the HL-LHC. Haley, Khanov, Rizatdinova.

Radiation Physics, Medical Physics, and Dosimetry. Application and development of detectors and techniques for radiation dosimetry, including optically stimulated luminescence, thermoluminescence, plastic nuclear track detectors, gamma spectroscopy, tissue equivalent proportional counters, and the newly developed fluorescent nuclear track detectors. Applications include medical dosimetry (diagnostic radiology and radiation therapy using photons, electrons, protons, heavy charged particles), accident dosimetry, space dosimetry, etc. Research also includes basic luminescent processes in insulators and the role of cosmic radiation in lightning initiation. Akselrod, Benton, Cho, Lucas, McKeever, Yukihara.

View additional information about this department at www.gradschoolshopper.com