General University Information
President: Douglas D. Baker
Dean of Graduate School: Bradley Bond
University website: http://www.niu.edu
Control: Public
Setting: Suburban
Total Faculty: 1,156
Total Graduate Faculty: 600
Total number of Students: 19,015
Total number of Graduate Students: 4,850

Department Information
Department Chairman: Prof. Laurence Lurio, Chair
Department Contact: Prof. Philippe Piot, Director of Graduate Studies
Total full-time faculty: 23
Total number of full-time equivalent positions: 20
Full-Time Graduate Students: 60
First-Year Graduate Students: 16
Female First-Year Students: 4
Total Post Doctorates: 11

Department Address
Physics Department, 202 LaTourette Hall, Normal Road
Northern Illinois University
DeKalb, IL 60115
Phone: (815) 753-753-1772
Fax: (815) 753-8565
E-mail: askphysics@niu.edu
Website: http://www.physics.niu.edu/physics/

Admissions
Address admission inquiries to: The Graduate School, Northern Illinois University, 180 Stadium Drive, DeKalb, IL 60115-2828, USA
Phone: (815) 753-0395
E-mail: gradsch@niu.edu
Admissions website: http://www.niu.edu/grad/apply/

Application deadlines
Fall admission:
U.S. students: July 15
Int'l. students: May 1
Spring admission:
U.S. students: December 10
Int'l. students: October 1

Application fee
U.S. students: $60
Int'l. students: $60
International application fee can be waived if payment of the fee puts a significant financial strain on the applicant.

Admissions information
For Fall of 2016:
Number of applicants: 62
Number admitted: 41
Number enrolled: 19

Admission requirements
Bachelor's degree requirements: Bachelor's degree in Physics or a related discipline is required.
Minimum undergraduate GPA: 2.75

GRE requirements
The GRE is recommended but not required.

Advanced GRE requirements
The Advanced GRE is recommended.
GRE Physics is not required, but strongly recommended, especially for international students.

TOEFL requirements
The TOEFL exam is required for students from non-English-speaking countries.
IBT score: 80
TOEFL may be substituted by IELTS, for which the minimum acceptable score is 6.5.

Other admissions information
Undergraduate preparation assumed: Mechanics: Taylor; Electricity and Magnetism: Griffiths; Quantum Mechanics: Eisberg/Resnick.

Tuition
Tuition year 2016–17:
Tuition for in-state residents
Full-time students: $4,446.72 per semester
Tuition for out-of-state residents
Full-time students: $7,659.72 per semester
Graduate assistantships (TA/RA) include tuition waiver, $357/hour
Credit hours per semester to be considered full-time: 9
Deferred tuition plan:
Health insurance: Yes, $1,981.00.
Other academic fees: Graduate assistants—$1,233.72/semester
Academic term: Semester
Number of first-year students who received partial tuition waivers: 13

Teaching Assistants, Research Assistants, and Fellowships
Number of first-year
Teaching Assistants: 11
Research Assistants: 3
Average stipend per academic year
Teaching Assistant: $15,039
Research Assistant: $16,307
Fellowship student: $18,150
All of the above amounts are for nine months (fall+spring). Most students are able to find full support for the summer months as RA’s and a few as TA’s at the same monthly rates.

FINANCIAL AID
Application deadlines
Fall admission:
U.S. students: February 15
Int'l. students: February 15
Spring admission:
U.S. students: December 10
Int'l. students: October 1

Loans
Loans are available for U.S. students.
Loans are not available for international students.
GAPSFAS application required: No
FAFSA application required: Yes
For further information
Address financial aid inquiries to: Student Financial Aid Office, Swen Parson Hall 245, Northern Illinois University, DeKalb, IL 60115.
Phone: (800) 892-3050
E-mail: finaid@niu.edu
Financial aid website: http://www.niu.edu/fa/

HOUSING

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

For further information
Address housing inquiries to: Housing & Dining, 101 East Neptune Hall, Northern Illinois University, DeKalb, IL 60115.
Phone: (815) 753-1525
E-mail: housingdining@niu.edu
Housing aid website: http://www.niu.edu/housing/

Table A—Faculty, Enrollments, and Degrees Granted

<table>
<thead>
<tr>
<th>Research Specialty</th>
<th>2016–17 Faculty</th>
<th>Enrollments Fall 2016</th>
<th>Number of Degrees Granted 2015–16 (2011–16)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Masters</td>
<td>Doctorate</td>
<td>Masters</td>
</tr>
<tr>
<td>Condensed Matter Physics</td>
<td>14</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td>Cosmology &amp; String</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Theory</td>
<td>11</td>
<td>8</td>
<td>1(8)</td>
</tr>
<tr>
<td>High Energy Physics</td>
<td>1</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Medical, Health Physics</td>
<td>1</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Physics and other</td>
<td>1</td>
<td>5</td>
<td>1(2)</td>
</tr>
<tr>
<td>Science Education</td>
<td>4</td>
<td>2</td>
<td>1(8)</td>
</tr>
<tr>
<td>Physics of Beams</td>
<td>–</td>
<td>11</td>
<td>10</td>
</tr>
<tr>
<td>Non-specialized</td>
<td>31</td>
<td>24</td>
<td>37</td>
</tr>
<tr>
<td>Total</td>
<td>31</td>
<td>24</td>
<td>37</td>
</tr>
<tr>
<td>Full-time Grad. Stud.</td>
<td>–</td>
<td>19</td>
<td>24</td>
</tr>
<tr>
<td>First-year Grad. Stud.</td>
<td>–</td>
<td>5</td>
<td>13</td>
</tr>
</tbody>
</table>

GRADUATE DEGREE REQUIREMENTS

Master’s: Thirty hours of course work with 24 in physics; thesis required for basic and applied physics specializations.

Doctorate: Students are required to complete 90 semester hours of graduate course work. This includes 15 hours in five out of six core courses covering classical and quantum mechanics, statistical physics, and electromagnetic theory, and twelve hours in two different areas of physics. A minimum of 24 hours dedicated to dissertation research is required. The remaining hours may include additional dissertation work or other graduate course work in physics and related fields. Students entering the program without a master’s degree in physics are required to pass a qualifying examination, which is usually taken at the end of the first year. Successful completion of a candidacy examination based on the core courses and other graduate courses is required of all students in the Ph.D. program. Transfer credits for students entering with a master’s degree or with graduate coursework from another institution are allowed, pending approval by the Graduate Studies Committee.

Thesis: Thesis may be written in absentia.

SPECIAL EQUIPMENT, FACILITIES, OR PROGRAMS

Students may specialize in five principal areas: condensed matter and materials physics, elementary particles and fields, accelerator physics, medical physics, and physics education.

The Department makes special efforts to accommodate the needs of students, such as employees of nearby industrial government laboratories and teachers employed in the region who wish to gain advanced degrees in physics on either a part-time or full-time basis.

On the departmental faculty are eight condensed matter experimenters and three theorists with whom graduate students may work on their thesis research. In addition there are joint and adjunct professors from both Fermilab and Argonne National Laboratory.

The Physics Department is a member of NIU’s Institute for Nano Science, Engineering, and Technology (InSSET) and as such faculty and students have access to a class 100 clean room containing a wide array of fabrication and characterization instruments and deposition systems. Some faculty members of the department also base their research programs at Argonne National Laboratory, about a one-hour drive by car from NIU, where they utilize national user facilities such as the Advanced Photon Source, the Electron Microscopy Center, and the Center for Nanomaterials.

Among the faculty working on High Energy (Elementary Particle) Physics are seven experimenters and one theorist, several research scientists and a number of graduate students doing thesis research. At present, the experimenters participate in the ATLAS experiment at the Large Hadron Collider (LHC), CERN (Geneva, Switzerland) as well as the g-2 and the Mu2E experiments at the Fermi National Acceleration Laboratory (40 minutes by car). The group is also active on research and development of particle detection technologies.

Accelerator physics R&D are coordinated through the Northern Illinois Center for Accelerator and Detector Development (NICADD). Current areas include studies of intense and cold electron sources, beam manipulation techniques, development of advanced diagnostics, and exploration of novel acceleration and radiation source mechanisms.

Both the particles and accelerator groups collaborate closely with nearby Fermilab and Argonne National Lab where they have access to laboratory and computing facilities. They also have their own laboratories at the university.

One faculty member works with a group of graduate students on medical physics, focusing on both diagnostic (proton-computed tomography) and therapeutic (proton therapy) aspects. One faculty member works closely with graduate students on methods of physics teaching and serves as a supervisor of their student teaching at selected nearby high schools.

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>$3,429,370</td>
<td></td>
</tr>
<tr>
<td>State/local government</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-profit organizations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Business and industry</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>$3,429,370</td>
<td></td>
</tr>
</tbody>
</table>
United States: Geographic Listing of Graduate Programs

FACULTY

Professor


Chattopadhyay, Swapna, Ph.D., University of California, Berkeley, 1982. Director of Accelerator Research. Member, Fermilab Directorate Senior Leadership Team. Scientific Associate, CERN. Accelerator Physics and Engineering. Elementary Particles, Experiment and theory.


Coutrakon, George, Ph.D., Stony Brook University, 1983. Medical Health Physics. Medical Physics, Experiment.


Hurst, Laurence, Ph.D., Harvard University, 1993. Chair, Condensed Matter Physics. Experiment.


Associate Professor


Assistant Professor


Shin, Young-Min, Ph.D., Seoul National University, 2006. Physics of Beams. Accelerator Physics, Experiment.

Emeritus


Willis, Suzanne, Ph.D., Yale University, 1979. Physics and other Science Education. Physics education.

Research Professor


Adjunct Professor


DEPARTMENTAL RESEARCH SPECIALTIES AND STAFF

Theoretical

Condensed Matter Physics. Liquid metals; magnetism and cooperative phenomena; many-body theory; optical properties of solids; electronic structure; multi-particle systems; quantum macrophysics; non-linear dynamics; transport phenomena; non-equilibrium systems; dynamics of disordered elastic systems. Glatz, Van Veenendaal, Winkler.

High Energy Physics. Weak interactions; gauge theory; phenomenology; super-symmetric theories. Albright, Martin.


Experimental

Condensed Matter Physics. Mössbauer effect; superconductivity; lattice defects; optical and transport properties of amorphous and crystalline solids; synchrotron radiation; surface physics; magnetic properties of solids; low-temperature physics; X-ray

High Energy Physics. LHC/ATLAS: collider physics at the energy frontier: studies of Higgs boson(s), searches for new massive states, detector design and operations; Fermilab (Mu2E, g-2): searches for rare processes at the intensity frontier; R&D of detector technologies and algorithms; dark matter/energy search; anti-matter physics. Adelman, Bhat, Blazey, Chakraborty, Chattopadhyay, Cummings, Eads, Hedin, Zutshi.