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: 1,185
Total Graduate Faculty: 768
Total number of Students: 21,138
Total number of Graduate Students: 5,324

Department Information
Department Chairman: Professor Laurence Lurio, Chair
Department Contact: Professor Dhiman Chakraborty, Director of Graduate Studies
Total full-time faculty: 23
Total number of full-time equivalent positions: 19
Full-Time Graduate Students: 44
First-Year Graduate Students: 14
Female First-Year Students: 2
Total Post Doctorates: 11

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

ADMISSIONS

Admission Contact Information
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: $40  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 2014:
Number admitted: 28
Number enrolled: 14

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 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: Fowles; Electricity and Magnetism: Corson and Lorrain; Modern Physics: Weidner and Sells; Optics: Fowles.

TUITION

Tuition year 2014–15:
Tuition for in-state residents
Full-time students: $4,190.62 per semester
Tuition for out-of-state residents
Full-time students: $8,380.32 per semester
Graduate assistantships (TA/RA) include tuition waiver.
Credit hours per semester to be considered full-time: 9
Deferred tuition plan: No
Health insurance: Available at the cost of $744 per year.
Other academic fees: Full-time—$1,358/sem. Graduate assistants—$1,358/sem.
Academic term: Semester
Number of first-year students who received full tuition waivers: 11

Teaching Assistants, Research Assistants, and Fellowships
Number of first-year
Teaching Assistants: 14
Research Assistants: 1
Fellowship students: 1
Average stipend per academic year
Teaching Assistant: $15,041
Research Assistant: $18,342
Fellowship student: $18,155
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
AFSA 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.
HOUSING

Availability of on-campus housing

Single students: Yes
Married students: Yes

For further information
Address housing inquiries to: Housing & Dining, 101 East Nep- tune 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

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<tr>
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<tbody>
<tr>
<td></td>
<td>Master’s</td>
<td>Doctorate</td>
<td>Master’s</td>
<td>Terminal’s</td>
</tr>
<tr>
<td>Astrophysics</td>
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<td>–</td>
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<tr>
<td>Condensed Matter</td>
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<td></td>
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<tr>
<td>Physics</td>
<td>14</td>
<td>1</td>
<td>16</td>
<td>1(1)</td>
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<tr>
<td>High Energy Physics</td>
<td>8</td>
<td>–</td>
<td>13</td>
<td>2(7)</td>
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<tr>
<td>Medical, Health Physics</td>
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<td>–</td>
<td>6</td>
<td>3(3)</td>
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<tr>
<td>Physics and other</td>
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<td></td>
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<tr>
<td>Science Education</td>
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<td>2</td>
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<td>1(1)</td>
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<tr>
<td>Physics of Beams</td>
<td>5</td>
<td>7</td>
<td>12</td>
<td>2(4)</td>
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<tr>
<td>Non-specialized</td>
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<td>14</td>
<td>17</td>
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<tr>
<td>Total</td>
<td>29</td>
<td>17</td>
<td>35</td>
<td>10(27)</td>
</tr>
</tbody>
</table>

Full-time Grad. Stud. – 15 19 – – –
First-year Grad. Stud. – 8 6 – – –

Graduate Degree Requirements

Master’s: Thirty hours of course work with 24 in physics; thesis required for pure 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 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 Argonne National Laboratory.

The Physics Department is a member of NIU’s Institute for Nano Science, Engineering, and Technology (InSNET) 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 proton-proton-collision experiment at 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 and associated algorithms, with emphasis on use of scintillator detectors at a future linear collider.

Accelerator physics R&D are coordinated through the Northern Illinois Center for Accelerator and Detector Development (NICADD). Current areas include studies of intense electron sources at the Fermilab-NICADD Photoinjector Laboratory and beam diagnostics using resources at NIU, Argonne and Fermilab; Argonne Tandem Linear Accelerator System; muon-based accelerators.

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 and high-end computing facilities 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 in close collaboration with Northwestern University and a nearby hospital.

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>$2,094,270</td>
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<tr>
<td>State/local government</td>
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<tr>
<td>Non-profit organizations</td>
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<td></td>
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<tr>
<td>Business and industry</td>
<td></td>
<td></td>
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<tr>
<td>Other</td>
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<td></td>
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<tr>
<td>Total</td>
<td>$2,094,270</td>
<td></td>
</tr>
</tbody>
</table>
FACULTY

Professor


Chattopadhyay, Swapan, 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.


Xiao, Zhili, Ph.D., University of Konstanz, 1996. Board of Trustees Professor. Distinguished Research Professor. Interim associate dean of research and graduate affairs, College of Liberal Arts and Sciences. Physicist, Materials Science Division, Argonne National Laboratory. Condensed Matter Physics, Materials Science, Metallurgy, Nano Science and Technology. Experiment.

Associate Professor


Assistant Professor


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

Emeritus


Kimball, Clyde W., Ph.D., St. Louis University, 1959. Condensed Matter Physics, Nano Science and Technology. Experiment.

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

Adjunct Professor


Welp, Ulrich, Ph.D., University of Konstanz, 1988. Experiment.


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.


Experimental


High Energy Physics. LHC/ATLAS: collider physics at the energy frontier: studies of top quark production and decay, 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; antimatter physics. Adelman, Bhat, Blazey, Chakraborty, Chattopadhyay, Cummings, Eads, Hedin.