Mathematical Physics

College of Arts and Sciences
Bloomington

Interdepartmental Graduate Committee on Mathematical Physics
(An asterisk [*] denotes membership in the University Graduate School faculty with the endorsement to
direct doctoral dissertations.)

Professor John Challifour* (Mathematics, Physics), Chairperson; Distinguished Professors Roger
Newton* (Emeritus, Physics), Ciprian Foias* (Emeritus, Mathematics); Professors Jiri Dadok*
(Mathematics), Robert Glassey* (Mathematics), David Hoff* (Mathematics), Andrew Lenard* (Emeritus,
Mathematics, Physics), Peter Sternberg* (Mathematics), Kevin Zumbrun* (Mathematics)

Academic Advisor
Professor John Challifour*, Swain Hall West 235, (812) 855-3257

Degree Offered

Doctor of Philosophy
This program offers advanced graduate training for superior students in the overlapping areas of
mathematics, theoretical physics, and their applications from a unified point of view and promotes
research in this field.

General supervision of the program is controlled by the Interdepartmental Graduate Committee on
Mathematical Physics. While no master's degree is offered, a student may qualify for a master's degree in
mathematics or physics during the course of study. A student usually enters the program at the beginning
of the second year of graduate study in mathematics or physics.

Special Program Requirements
(See also general University Graduate School requirements.)

Doctor of Philosophy Degree

Admission Requirements
Students in the Mathematical Physics Program must be enrolled in either the Department of Mathematics
or the Department of Physics. Basic preparation should include courses in advanced calculus, linear
algebra, modern algebra, complex variables, classical mechanics, electromagnetism, quantum
mechanics, modern physics, thermodynamics, and statistical mechanics. Knowledge of the following
fields is desirable: real analysis, differential equations, probability, topology, differential geometry, and
functional analysis.

Course Requirements
A total of 90 credit hours, including dissertation. Required courses are determined by the advisory
committee on the basis of the student's previous training and main fields of interest.
Advisory Committee
Composed of members of both the Department of Mathematics and the Department of Physics.

Minors
Mathematics and physics.

Foreign Language/Research-Skill Requirement
Same as in the department of residence.

Qualifying Examination
Consists of parts of the Departments of Mathematics and Physics qualifying examinations, as determined by the student's advisory committee.

Final Examination
Oral and public defense of dissertation.

Courses
See listings of the Departments of Mathematics and Physics.