GRADUATE STUDY IN MATHEMATICS

The Department of Mathematics at Boston College offers a selective and focused graduate program leading to the Degree of Doctor of Philosophy (Ph.D), specializing in two broad research areas:

- Geometry/Topology
- Number Theory/Representation Theory/Algebraic Geometry

and also emphasizing excellence in teaching.

The research areas of our faculty in Geometry/Topology include:

- 3-dimensional manifolds and their geometry
- Dynamics
- Geometry of moduli spaces
- Heegaard-Floer and Khovanov homology
- Hyperbolic geometry
- Kleinian groups
- Knot theory

The research areas of our faculty in Number Theory/Representation Theory/Algebraic Geometry include:

- Automorphic forms
- Algebraic geometry
- The cohomology of arithmetic groups
- The geometry of Shimura varieties
- The local Langlands correspondence
- Multiple Dirichlet series
- Representation theory
- Spectral geometry

Our graduate students are part of a close-knit departmental community, and benefit not only from individual collaboration with their research advisors, but also from the experience of the entire faculty and fellow students.

Boston College is one of the Boston area’s premier institutions, which includes over 50 area universities and colleges. Boston is a world-renowned center for Mathematics and provides a vibrant intellectual climate in which graduate students thrive, with many outdoor and cultural opportunities in the beautiful New England area.
Financial Aid
All applicants will be considered for teaching assistantships, which provide full tuition remission, health insurance coverage, and a stipend (currently $21,000 for the academic year; there is the possibility of summer support).

Lecture Series and Seminars
The Boston College Math Department hosts a yearly Distinguished Lecturer series. The Distinguished Lecturer gives three lectures and ample time is incorporated into the schedule to allow for interaction with students. Previous Distinguished Lecturers were John Conway, Ravi Vakil, Benson Farb, Peter Sarnak, and Robert Ghrist.

Boston College runs a Number Theory seminar jointly with MIT, alternating between the two schools, in which outstanding researchers from all over the country present their work in a wide range of areas of Number Theory.

We also have our own active research seminars in Geometry/Topology and Number Theory.

Graduate Consortium
Boston College has a reciprocity agreement with Boston University, Brandeis, and Tufts that allows graduate students in Mathematics to cross register for one course each semester at one of these institutions. Students may also take courses in cognate departments at Boston College.

Teaching
Excellence in teaching is an important part of the Boston College tradition, in which we take pride. The Math Department runs a Teaching Seminar each year to mentor and support new Graduate student teachers.

Our Students
The enrollment at Boston College is roughly 14,500, including more than 4,000 graduate students. The Math Department has a small program: each year’s entering class will likely be either five or six students, ensuring individual attention from faculty.

Socializing
The Math Department looks for opportunities to enhance interaction between faculty and graduate students, through lunch at orientation, cookies and tea after the Teaching Seminar, the yearly TA appreciation luncheon, the beginning-of-term brunch, and other activities.

Location
Boston College is located in a beautiful residential section of Newton which is about six miles from the heart of Boston. There is easy access to the city by public transportation. The Boston area offers countless outstanding seminars, lectures, colloquia, and concerts throughout the year.

Housing
The Housing Office at Boston College provides an extensive list of off-campus housing options. Most graduate students rent rooms or apartments near the campus.

Application Requirements
Applications received by Jan. 2, 2013 will receive full consideration, including consideration for Teaching Assistantships. Applications include application forms, official transcripts, GRE scores (including Math subject test), 3 letters of recommendation, a description of advanced mathematics coursework, and TOEFL (for international students). Information on how to apply can be found at www.bc.edu/gsas.
Coursework

Students take first-year courses in Algebra, Topology, and Real and Complex Analysis, second year courses such as Number Theory, Representation Theory, and Geometry, and topics courses in subsequent years. Very-well-prepared students may be allowed to skip the first-year graduate courses (for example, if they have already taken them elsewhere) and proceed directly to advanced study.

Exams

There are three types of exams: Preliminary, Language and Doctoral Comprehensive.

Preliminary Exams

After the first year, students take two of the three preliminary exams in Real and Complex Analysis, Algebra, and Topology. Well-prepared students may take these exams earlier, upon consultation with the Graduate Program Director.

Language Exam

This exam consists in translating mathematics from French or German into English.

Doctoral Comprehensive Exam

During the third year the student chooses a research advisor and forms a doctoral committee, consisting of the research advisor and two other department members.

The doctoral comprehensive exam consists of a research topic and one secondary topic, chosen by the student in consultation with the doctoral committee. Typically these are based on topics courses or independent study completed by the student in the second and third years.

Teaching

In addition to their responsibilities as teaching assistants and teaching fellows, students participate in the Teaching Seminar in the fall semester of their first two years.

Dissertation

Upon satisfactory performance in exams, the student is admitted to candidacy for the Ph.D and begins research for the doctoral dissertation. The dissertation must consist of original scholarly work. The doctoral committee will read and evaluate the completed dissertation and conduct an oral examination, at which the dissertation is defended in a public meeting.
AVNER ASH
Ph.D., Harvard University
Number Theory, Algebraic Geometry

JENNY A. BAGLIVO
Ph.D., Syracuse University
Statistics, Applied Mathematics

JOHN BALDWIN
Ph.D., Columbia University
Low-dimensional Geometry and Topology

IAN BIRINGER
Ph.D., University of Chicago
Low-dimensional Geometry and Topology

MARTIN BRIDGEMAN
Ph.D., Princeton University
Geometry, Topology

DANIEL W. CHAMBERS
Ph.D., University of Maryland
Probability, Stochastic Processes, Statistics

DAWEI CHEN
Ph.D. Harvard University
Algebraic Geometry

CHI-KEUNG CHEUNG
Ph.D., University of California, Berkeley
Complex Differential Geometry, Several Complex Variables

MAKSYM FEDORCHUK
Ph.D. Harvard University
Algebraic Geometry

SOLOMON FRIEDBERG
Ph.D., University of Chicago
Number Theory, Representation Theory

DAVID GERAGHTY
Ph.D., Harvard University
Number Theory

JOSHUA GREENE
Ph.D., Princeton University
Low-dimensional Topology

ELISENDA GRIGSBY
Ph.D., University of California, Berkeley
Low-dimensional Topology

ROBERT H. GROSS
Ph.D., Massachusetts Institute of Technology
Algebra, Number Theory, History of Mathematics

BENJAMIN HOWARD
Ph.D., Stanford University
Number Theory, Arithmetic Geometry

WILLIAM J. KEANE
Ph.D., University of Notre Dame
Abelian Group Theory

DUBI KELMER
Ph.D., Tel Aviv University
Number Theory, Spectral Geometry, Dynamical Systems

MARGARET J. KENNEY
Ph.D., Boston University
Algebraic Coding Theory, Mathematics Education

TAO LI
Ph.D., California Institute of Technology
Geometry, Topology, Knot Theory

ROBERT MEYERHOFF
Ph.D., Princeton University
Geometry, Topology

RENATO MIROLLO
Ph.D., Harvard University
Dynamical Systems

NANCY E. RALLIS
Ph.D., University of Indiana
Algebraic Topology, Fixed Point Theory, Probability and Statistics

MARK REEDER
Ph.D., Ohio State University
Lie Groups, Representation Theory

NED I. ROSEN
Ph.D., University of Michigan
Logic, Combinatorics, Dynamical Systems

DAVID TREUMANN
Ph.D., Princeton University
Algebraic Geometry and Representation Theory
SELECTED FACULTY PUBLICATIONS


- Elisenda Grigsby, On the colored Jones polynomial, sutured Floer homology, and knot Floer homology, with S. Wehrli, *Advances in Mathematics*, 223, No. 6 (2010), 2114-2165.


