Durham University

Mathematical Sciences

Postgraduate study opportunities 2012/13
World-class taught and research degrees to PhD
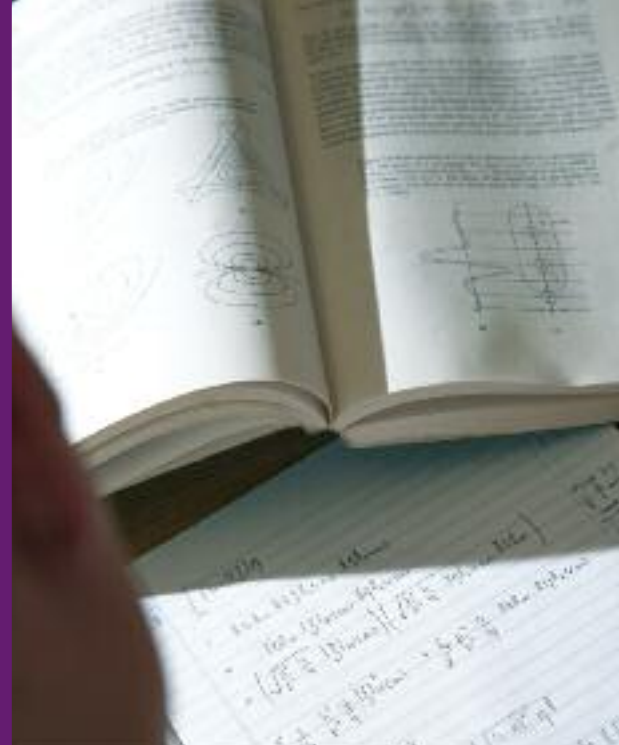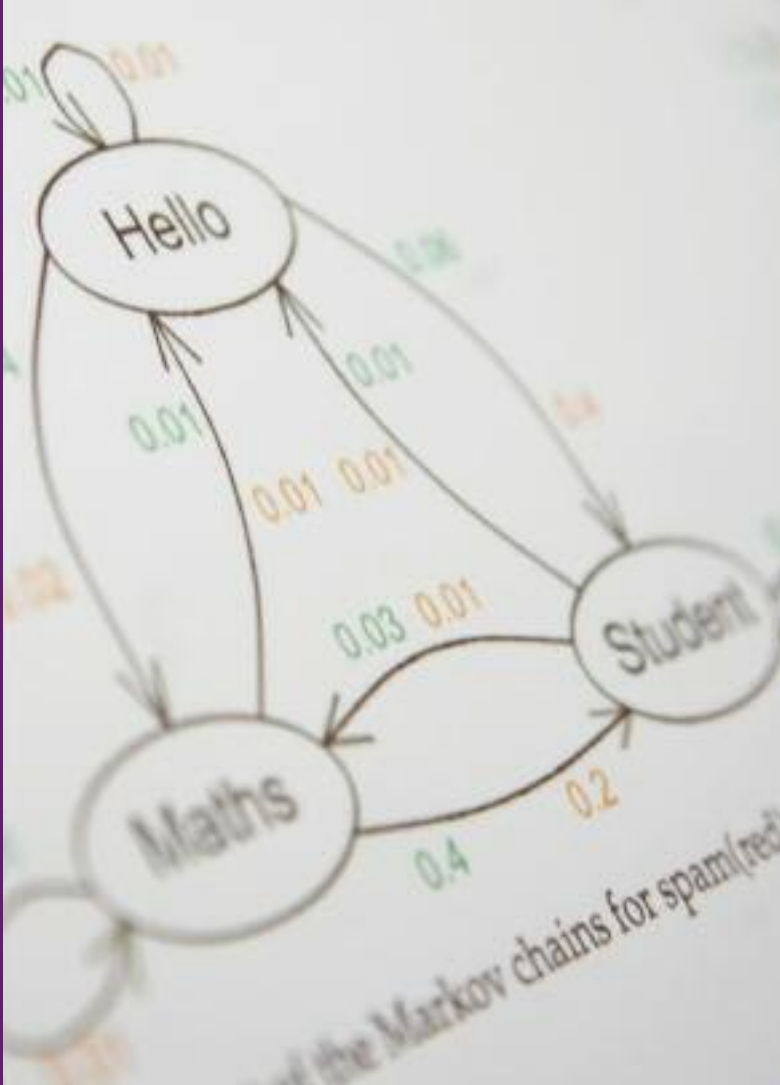
World-class
research from a
UK leading department
with a prominent
international reputation.

Mathematical Sciences

The Department of Mathematical Sciences is one of the leading research units in the country, with interests in a wide range of areas covering Pure Mathematics, Applied Mathematics and Theoretical Physics, Statistics and Probability.

ABOUT THE DEPARTMENT

The Department produces world-class research and enjoys a prominent international reputation. The Department performed very successfully in the 2008 Research Assessment Exercise. The Applied Mathematics unit was ranked seventh in the country according to combined research impact.

The Department offers taught MSc programmes in Mathematical Sciences, Biomathematics and in Particles, Strings and Cosmology. There are many research seminar series in which postgraduate students actively participate. Each year, several high-level conferences and workshops in Mathematical Sciences are held in Durham, including the LMS – EPSRC Durham Symposia (a prestigious series of high-quality international research conferences), and students are also given the opportunity to present their research results at conferences elsewhere. The Department is part of MAGIC, a consortium of 16 universities offering distance learning for postgraduate students via interactive access-grid technology.

POSTGRADUATE RESEARCH DEGREES

The following research degrees are currently offered:

- PhD
- MSc.

MAIN AREAS OF RESEARCH
Pure Mathematics

The major research areas within the Pure Mathematics group are Algebra (arithmetic algebraic geometry, algebraic K-theory, algebraic number theory, automorphic forms), Geometry (differential geometry, discrete groups, hyperbolic geometry, singularity theory), and Topology (algebraic and geometric topology, topological robotics, dynamical systems, global analysis, global analysis). The Willmore Pure Mathematics Postgraduate Award offers up to £1,000 and/or subsidised accommodation in St Mary's College to outstanding PhD students.
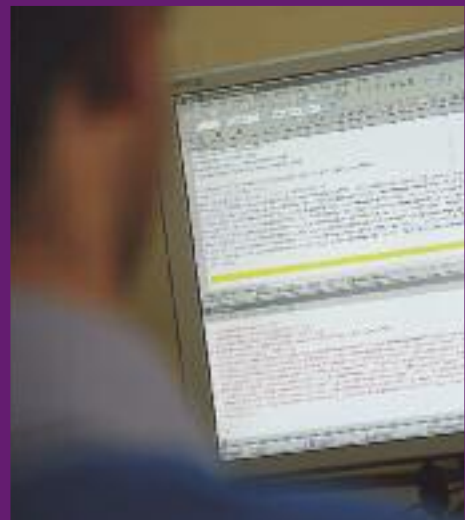
Applied Mathematics and Theoretical Physics

The Centre for Particle Theory is a joint venture between the Department of Mathematical Sciences and the Department of Physics, and has an international reputation for its research into particle physics.

The main research interests within the Department of Mathematical Sciences are in the following areas: String Theory and Gravity, Quantum Field Theory, Integrable Systems and Topological Solitons. Comprehensive training is provided for PhD students and there are also several weekly seminars given by visitors and external speakers as well as by members of the Centre.

The research interests of members of the Numerical Analysis group include Numerical Modelling and Analysis, Partial Differential Equations, Mathematical Biology, and Dynamical Systems.

Statistics and Probability

The Statistics and Probability Group is a centre for foundational and methodological statistics, for the development of large-scale applications for the sciences and industry, for research in limiting behaviour of complex stochastic systems, and for the promotion of statistics and applied probability in the rest of the University and wider community. Members of staff are active in high-quality research ranging from major contributions to theory of foundations and methodology of statistics and probability, to case studies and software for complex practical problems.

The Department is a member of the *Academy for PhD Training in Statistics (APTS)*, giving postgraduate students access to high-quality training courses covering key areas of statistics and probability.

RECENT THESIS TITLES

- "Topological Complexity of Configuration Spaces"
- "Maximal graphs and spacelike mean curvature flows in semi-euclidean spaces"
- "Infinite Dimensional Symmetries of Self-Dual Yang-Mills Theories"
- "Guage/Gravity Duality: Recovering the Bulk from the Boundary using AdS/CFT"
- "Policy making using computer simulators for complex physical systems; Bayesian decision support for the development of adaptive strategies"
- "Ecotoxicological Risk Assessment: Developments in PNEC Estimation".

POSTGRADUATE RESEARCH FACILITIES

The Department has excellent facilities for PhD students. All research students have their own workspace with a network-linked computer, and students participate in many research seminar series.

TYPICAL ENTRY REQUIREMENTS FOR RESEARCH DEGREES

- First degree or equivalent in a relevant subject.

ENGLISH LANGUAGE REQUIREMENTS

- IELTS of 6.5 (with no element below 6.0) or equivalent.

We welcome applications from holders of international qualifications. For advice on the equivalency of international qualifications and further information on English language requirements, please contact our International Office on **international.office@durham.ac.uk** or visit our website at **www.durham.ac.uk/international**

FUNDING OPPORTUNITIES FOR POSTGRADUATE RESEARCH STUDENTS

UK Research Councils studentships are available to both Home/EU (fees-only grants for EU students) and international students (full award at Home/EU level), from EPSRC (all areas). STFC also offer funding to home students studying particle physics. The University also has a range of funding opportunities for postgraduate students. To find out what support you could be eligible to receive see our online funding database at **www.durham.ac.uk/study/postgraduate/fees/search**

TAUGHT PROGRAMMES
MSc in Mathematical Sciences

This course aims to bring you, in 12 months, to a position where you can embark with confidence on a wide range of careers, including taking a PhD in Mathematics or related disciplines. There is a wide range of taught modules on offer, and you will also produce a dissertation on a topic of current research interest taken from your choice of a wide range of subjects offered.

MSc in Biomathematics

This course aims to bring you, in 12 months, to a position where you can embark with confidence on a wide range of careers at the interface between Mathematics and Biology, including a PhD in an interdisciplinary area within the recently created Biophysical Sciences Institute. This Institute is an exciting initiative that brings together research excellence and expertise from across all departments in Durham University's Science Faculty. The course consists of four modules, offering a wide range of specialised topics from biophysics to biostatistics and more general training in mathematical techniques appropriate for the life sciences.

You also produce a dissertation on a topic of current interdisciplinary research, prepared under the guidance of a supervisor with expertise in the area.

MSc in Particles, Strings and Cosmology

The course is supported by the Centre for Particle Theory, which is a collaborative research centre of the Departments of Mathematical Sciences and Physics. It is intended for students who have already obtained a good first degree in either Mathematics or Physics, including courses in quantum mechanics and relativity. You will follow a programme of lecture courses and planned reading, and prepare a dissertation on a topic of current research. You can choose a topic of special interest from a wide variety of subjects, and will be assigned a supervisor with expertise in the chosen area.

Because of the size and varied interests, the Centre is able to offer a comprehensive programme of lectures in particle physics which take the student to the frontiers of present research.

TYPICAL ENTRY REQUIREMENTS FOR TAUGHT PROGRAMMES

- 2:1 degree or equivalent in a relevant subject.

ENGLISH LANGUAGE REQUIREMENTS

- IELTS of 6.5 (with no element below 6.0) or equivalent.

We welcome applications from holders of international qualifications. For advice on the equivalency of international qualifications and further information on English language requirements, please contact our International Office on **international.office@durham.ac.uk** or visit our website at **www.durham.ac.uk/international**

FUNDING OPPORTUNITIES FOR TAUGHT POSTGRADUATE STUDENTS

The University has a range of funding opportunities for postgraduate students. To find out what support you could be eligible to receive see our online funding database at **www.durham.ac.uk/study/ postgraduate/fees/search**

CAREER OPPORTUNITIES

Graduates from both the research and taught postgraduate degrees go on to work in a variety of areas requiring advanced mathematical skills, including working in finance, consultancy, and industrial positions involving mathematical modelling. PhD graduates with an interest in continuing their research can go on to postdoctoral research positions leading to an academic career. The MSc degrees are excellent preparation for pursuing further study on a research degree.

CAREERS AND EMPLOYABILITY

For further information on career options and employability, including the results of the Destination of Leavers survey, student and employer testimonials and details of work experience and study abroad opportunities, please visit **www.durham.ac.uk/maths/postgraduate/ employability**

KEY INFORMATION

The thriving postgraduate community of the Department includes 14 students working in Pure Mathematics, 37 in Applied Mathematics, and 22 in Statistics.

Name:
John Chapman

Home Country:
UK

Postgraduate Course:
PhD Mathematics

I first heard about the PhD course at Durham as an undergraduate in Durham. I really enjoyed my undergraduate degree, but when I finished didn't want to go on to further study. Before coming back to Durham I worked for the UK Ministry of Defence in its research laboratory (Defence Science and Technology Laboratory).

The postgraduate students and staff in the Department in Durham are undoubtedly one of its strongest attractions to a prospective student. Everyone is very friendly and I have found no divide between them; everyone is treated equally and their opinions count, be that on mathematical issues or social matters. From a more academic perspective I have a great supervisor and this has allowed me to develop as a mathematician.

A PhD is a necessary qualification for several careers, but equally it is useful even in those careers that don't require it. The ability to undertake novel research, to communicate ideas in writing and lectures, to analyse data and ideas and collaborate widely are useful transferable skills that you will develop during your PhD.

I hope to be doing a job with a large mathematical component and I think that my PhD in Durham will have prepared me for this well.

Durham
University

Contact details

For further information on research degrees contact:

Mrs Fiona Giblin
Tel: +44 (0)191 334 3082
Email: maths.office@durham.ac.uk

www.durham.ac.uk/mathematical.sciences

For further information on taught programmes contact:

Dr F. Tari
MSc in Mathematical Sciences
Tel: +44 (0)191 334 3055
Email: farid.tari@durham.ac.uk

www.durham.ac.uk/mathematical.
sciences/pure/pgpure/mscpure

Professor A. Taormina
MSc in Biomathematics
Tel: +44 (0)191 334 3059
Email: anne.taormina@durham.ac.uk

www.durham.ac.uk/mathematical.
sciences/biomaths/mscbio

Dr V. Hubeny
MSc in Particles, Strings and Cosmology
Tel: +44 (0)191 334 3097
Email: veronika.hubeny@durham.ac.uk

www.cpt.durham.ac.uk/
GraduateStudies

Department of Mathematical Sciences
Durham University
Science Laboratories
Durham DH1 3LE
United Kingdom

Tel: +44 (0)191 334 3050
Fax: +44 (0)191 334 3051

www.durham.ac.uk/mathematical.sciences

Designed by: crombie.
www.crombiecreative.com

WORLD
LAND
TRUST™

www.carbonbalancedpaper.com
CBP0008590809114007

FSC
www.fsc.org

MIX
Paper from
responsible sources
FSC® C011781

DurPG1213MATH