What we will cover in this session

• What are your options?

• What other Cambridge Maths Part III/ MMaths graduates have done in the past

• Finding postgrad study and work opportunities

• How the Careers Service can help you
What happens after Cambridge

**All Graduates 2015**
- 34% Further study
- 58% Employment
- 3% Travelling/unavailable
- 5% Unemployed

**Maths Pt III Graduates 2015**
- 67% Further study
- 29% Employment
- 3% Travelling/unavailable
- 1% Unemployed
## Destinations of previous Maths Pt III students – 6 months after leaving Cambridge

<table>
<thead>
<tr>
<th></th>
<th>15/16</th>
<th>14/15</th>
<th>13/14</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOTAL GRADUATING</td>
<td>242</td>
<td>242</td>
<td>239</td>
</tr>
<tr>
<td>Responded to survey</td>
<td>183</td>
<td>172</td>
<td>179</td>
</tr>
<tr>
<td>Further study - Research</td>
<td>116</td>
<td>103</td>
<td>122</td>
</tr>
<tr>
<td>Further study - Taught</td>
<td>8</td>
<td>13</td>
<td>11</td>
</tr>
<tr>
<td>Employment</td>
<td>47</td>
<td>48</td>
<td>36</td>
</tr>
<tr>
<td>Travel/unavailable</td>
<td>8</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>Job searching</td>
<td>4</td>
<td>2</td>
<td>5</td>
</tr>
</tbody>
</table>
Where do Pt Ills go in industry? 2016 grads

Trading analyst JP Morgan
Trader Optiver
Data scientist First Derivatives
Data analyst Tesco
Machine learning eng Roam Analytics
Data & analytics Digital marketing
Data analyst APT
Technology advisor Accenture
Tutor Maths & Physics
Teacher A-level Maths
Operational researcher UK Gov

Developer Darktrace
Software developer Metaswitch
Software eng 5AI
Software eng Ensoft
Grad research eng Dyson
Freelance Maths Consultant

Actuarial consultant EY
Trainee auditors Deloitte
Data analyst Proxem
Software developer Metaswitch
Data scientist Proxem
Software eng Metaswitch

Optiver
First Derivatives
Proxem
Darktrace
Metaswitch
5AI
Dyson
Metaswitch
Ensoft
Employment – Pt III class in 2015

**ACCOUNTING / ACTUARIAL**
- Actuarial Associate, PwC
- Trainee Actuary, Willis Towers Watson
- Actuary, Rothesay Life

**BANKING / FINANCE**
- Equities Trader, Jane Street
- Software Developer, IMC Trading
- Financial Analyst, Real Estate Investment

**TECH**
- Software Engineer, Ensoft
- Software Developer, Softwire
- Software Engineer, Metaswitch
- Software Engineer, Cambridge Consultants

**CONSULTING**
- IT Consultant, d-fine
- Junior Consultant, 2020 Delivery

**TEACHING**
- Maths Teacher, Brighton College
- Maths Teacher, North London Collegiate

**ENGINEERING**
- Graduate Engineer, Renishaw

**OTHER**
- Strategy Consultant, City Football Group
- Quant Analyst, Sports Betting
### Further study 2016 Part III – UK Universities

<table>
<thead>
<tr>
<th>University</th>
<th>Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CAMBRIDGE</strong></td>
<td>x38  \n</td>
</tr>
<tr>
<td>PhD in Theoretical Physics</td>
<td></td>
</tr>
<tr>
<td>PhD in Applied Maths and TP</td>
<td></td>
</tr>
<tr>
<td>PhD in Mathematical Analysis</td>
<td></td>
</tr>
<tr>
<td>PhD in Pure Maths</td>
<td></td>
</tr>
<tr>
<td>PhD in Astronomy</td>
<td></td>
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<tr>
<td>PhD in Physics</td>
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<tr>
<td>PhD in Engineering</td>
<td></td>
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<tr>
<td>PhD in Earth Sciences</td>
<td></td>
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<tr>
<td>PhD in Fluid Dynamics</td>
<td></td>
</tr>
<tr>
<td>Mphil in Strategy, Marketing &amp; Ops</td>
<td></td>
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<tr>
<td>Mphil in Nuclear Energy</td>
<td></td>
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<tr>
<td>Mphil in Computational Biology</td>
<td></td>
</tr>
<tr>
<td><strong>BATH</strong></td>
<td>x2  \n</td>
</tr>
<tr>
<td>Mres in Mathematics</td>
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</tr>
<tr>
<td><strong>OXFORD</strong></td>
<td>x4  \n</td>
</tr>
<tr>
<td>DPhil in Mathematics</td>
<td></td>
</tr>
<tr>
<td><strong>SHEFFIELD</strong></td>
<td>\n</td>
</tr>
<tr>
<td><strong>WARWICK</strong></td>
<td>x3  \n</td>
</tr>
<tr>
<td>PhD in Mathematics</td>
<td></td>
</tr>
<tr>
<td><strong>BIRMINGHAM</strong></td>
<td>\n</td>
</tr>
<tr>
<td><strong>LEEDS</strong></td>
<td>\n</td>
</tr>
<tr>
<td><strong>IMPERIAL</strong></td>
<td>x3  \n</td>
</tr>
<tr>
<td><strong>LANCASTER</strong></td>
<td>\n</td>
</tr>
<tr>
<td><strong>SOUTHAMPTON</strong></td>
<td>x2  \n</td>
</tr>
<tr>
<td>PhD in Mathematics</td>
<td></td>
</tr>
<tr>
<td><strong>DURHAM</strong></td>
<td>\n</td>
</tr>
<tr>
<td><strong>KING’S COLLEGE LONDON</strong></td>
<td></td>
</tr>
<tr>
<td>PhD in Non-Equilibrium Systems</td>
<td></td>
</tr>
<tr>
<td><strong>EDINBURGH</strong></td>
<td>\n</td>
</tr>
<tr>
<td><strong>BRISTOL</strong></td>
<td>\n</td>
</tr>
<tr>
<td><strong>YORK</strong></td>
<td>x2  \n</td>
</tr>
<tr>
<td><strong>QUEEN MARY</strong></td>
<td>x5  \n</td>
</tr>
<tr>
<td>PhD in Combinatorics</td>
<td></td>
</tr>
<tr>
<td>PhD in Mathematics</td>
<td></td>
</tr>
<tr>
<td><strong>UCL</strong></td>
<td>x3  \n</td>
</tr>
<tr>
<td>PhD in Quantum Information Theory</td>
<td></td>
</tr>
<tr>
<td>PhD in Mathematics</td>
<td></td>
</tr>
</tbody>
</table>

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Further study 2016 Part III – N. American Universities

BERKELEY x2
PhD in Physics
PhD in Maths

CHICAGO
PhD in Mathematics

CHICAGO
PhD in Mathematics

MIT x4
PhD in Pure Mathematics
PhD in Theoretical Physics
PhD in Computer Science

COLUMBIA
PhD in Statistics

TORONTO
PhD in Astrophysics

PRINCETON x2
PhD in Chemical & Biological Engineering
PhD in Mathematics

BROWN
PhD in Physics

YALE
PhD in Physics

CORNELL
PhD in Mathematics

STANFORD
PhD in Mathematics

MICHIGAN
PhD in Mathematics

MCGILL
PhD in Mathematics
<table>
<thead>
<tr>
<th>University</th>
<th>Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZURICH x2</td>
<td>PhD in Physics</td>
</tr>
<tr>
<td>AMSTERDAM</td>
<td>MSc in Artificial Intelligence x2</td>
</tr>
<tr>
<td>BONN</td>
<td>Master in Cultural Anthropology</td>
</tr>
<tr>
<td>HANNOVER</td>
<td></td>
</tr>
<tr>
<td>UNIV LIBRE DE BRUXELLES</td>
<td></td>
</tr>
<tr>
<td>HEIDELBERG x3</td>
<td>MSc in Physics</td>
</tr>
<tr>
<td></td>
<td>PhD in Theoretical Physics</td>
</tr>
<tr>
<td>DRESDEN</td>
<td></td>
</tr>
<tr>
<td>ENS PARIS</td>
<td>Conservatoire – piano performance</td>
</tr>
<tr>
<td>HAMBURG x2</td>
<td>PGCE - secondary maths</td>
</tr>
<tr>
<td>LUND</td>
<td></td>
</tr>
<tr>
<td>VALENCIA</td>
<td></td>
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<tr>
<td>MADRID</td>
<td></td>
</tr>
<tr>
<td>PIERRE &amp; MARIE CURIE</td>
<td></td>
</tr>
<tr>
<td>MACQUARIE</td>
<td></td>
</tr>
<tr>
<td>MONASH</td>
<td></td>
</tr>
</tbody>
</table>
What about you? What questions do you have?

- Postgraduate study/research – how, where, when?
- Overall career direction?
- Understanding job search – deadlines, selection processes, what employers look for?
- How and when to progress your next steps…alongside this year’s course.
Why consider a postgraduate degree?

- Planning for a career in academia
- Doing the degree to then move into a specific career
- For the love of the subject. You just aren’t finished studying yet but you think you’ll go on to an unconnected career
- Elaborate and very expensive procrastination – not the best reason but it can benefit you
Science PhDs – where do they go?

PhD Career Destinations

Figure 1.6 Careers in and outside science

Careers outside science

- Non-university Research (industry, government etc.)
- 17%
- 26.5%

Careers in science

- Early Career Research
- 53%
- 30%

- Permanent Research Staff
- 47%
- 3.5%

- Professor
- 0.45%

The Scientific Century: securing our future prosperity
Royal Society Policy document 02/10
Planning postgrad study?

Postgraduate study

Why study further?
- PhDs - what to consider.

Get qualified
- Course types & key details.

USA
- Facts about courses/fees.

Explore opportunities
- Find courses/PhD options.

Fees and funding
- Costs, loans & bursaries.

How to apply
- Top tips for success.

Overseas (not USA)
- Process & applications.

Podcasts
- Careers briefings & advice.
Choosing a degree

Types of study

There are two main types of study available in the USA:

- Doctorate (research and professional). There are no pure research degrees in the USA. All degrees (doctorates included) include a combination of research and taught components.

  PhD’s take longer to complete than in the UK; at least 4 years but typically 4-6 yrs - the first 1-2 years including taught courses.

- Masters (academic, research and professional). Academic Masters are usually 2 years.

Students may also attend US universities as non-degree seeking students or visiting students.

Fulbright: further advice on degree and university types.

If you are considering a professional degree (law/medicine) check with the relevant professional body that the US qualification is valid in your home country or country where you might want to work.
Postgraduate Study in the US – main differences

US longer period of study & research

US part-taught, i.e. MS+PhD

US – you teach

US – requires ‘proof of competence….GRE

Revised GRE and Subject GRE

Apply direct to appropriate University

Costly without award of scholarship
US PG study – things to be aware of

Fulbright awards – global, for mutual exchange all subjects all US

GRE, GMAT, TOEFL

Academic transcripts

References (letters of recommendation)

Statement of purpose (critical, but NOT a research proposal)

Visa (proof of funding)

Funding...
Use the Fulbright Commission web pages as a source of pdf downloads about all aspects of related paperwork, incl GRE, for applications to US graduate schools.

Apply in good time to the US graduate schools you’re interested in.

Try to broaden your interests beyond the higher profile ‘Ivy League’ schools - see the comprehensive Peterson’s Guide.

Satisfy yourself about the reputation and standing of mathematical studies and research, as well as the university itself.
Postgraduate study - use your department

- Your most valuable resource – academic staff in your department
- Read about research interests in the CMS
  - [http://www.maths.cam.ac.uk/research/](http://www.maths.cam.ac.uk/research/)
- Speak to PhD students
- Use CMS/Faculty of Mathematics information pages
Make sure you know of any staff members in your own college and the Faculty of Mathematics who have had experiences in the US graduate school system.

Talk to them!

Find out more about what they expected, how it turned out, what they learnt and were able to bring to Cambridge.

Use GradLink to identify alumni with US graduate school experience.
Advice from a former Part III mathematician

Feedback - Applying for a PhD in the USA: a maths student perspective

Introduction

From 2008 to 2012 I studied mathematics at Pembroke College, Cambridge. In my final year, I decided to apply for a PhD in the USA, and in September 2012 I started a doctoral program at the Massachusetts Institute of Technology in Boston.

Like most students, I started looking into a PhD at the start of my final year, and because most applications to the USA must be submitted by early January, this did not leave much very much time at all. I found it very difficult to obtain practical information about the applications procedure, and with academic study to do at the same time, it was very hard work.

I have therefore written this document to provide any students interested in applying to the USA this year with some basic facts, which will hopefully make their time easier than mine was in my final year. Because I am a mathematics student, this document may be more relevant to those in the sciences. However I hope that students of any discipline will find it useful.

Why apply to the USA?

PhDs in the USA are of a very different composition to those in the UK, and whether this style is better for you depends very much on your background. In the first year of an American doctorate, students are expected to take more courses (which may involve more exams), and only start work on a thesis in their second year. More often than not, PhD students will be required to teach for at least some period of their studies.

Because of this, the typical length of a PhD in the USA is about five years, so it may not suit those who wish to get started on research straight away. However, for those who are unclear about what specifically to do a thesis on this is ideal, as one gets to spend a year picking out precisely what field to research. Also, for those who are considering a career in academia, the extra time can be thought of as two more years of funding and security, when one does not have to worry about applying for a postdoctoral position.

Of course, there are numerous other reasons why PhDs in the USA are an excellent opportunity. Research in the USA is extremely well-funded and the top institutions have excellent international reputations. I was also very motivated by the desire to study and live in a different environment, which I felt would be beneficial both academically and socially.

As well as the shortage of time, applying to the USA is hard work. I found that the application forms were more involved than those for UK places, and had more requirements, including the taking of the Graduate Record Exam (GRE), which I describe in detail below.

However, the applications process does have several benefits. Firstly, the system is much more standardised than in the UK, which cuts down the workload when applying to several institutions. Also, most places have the same deadline for acceptance of their offers (around April 15th), which means that you are sure to have heard back from everywhere before having to make a final decision. Also, many offers are unconditional, which takes the pressure off final-year exams, and provides much more security.

Where to apply

When deciding where to apply, the Internet is an excellent resource. I found that all the universities I was interested in had very detailed and useful information about their academic programs available online. I was able to email faculty members and students, and in general I

http://www.careers.cam.ac.uk/sectors/Pgstudy/USfeedback7.asp
If not postgrad study, what are your options?

Scientists and mathematicians are lucky – you can access roles that use your degree directly or indirectly…. or general roles for any degree discipline.
Finding jobs and other opportunities

http://www.careers.cam.ac.uk/CamCareers/Vacancies.aspx

We currently have 1260 vacancies and vacation opportunities from organisations targeting Cambridge students. Get new matching vacancies emailed to you daily or weekly.

- Search for specific job titles, organisations, locations etc - you can enter all or part of a word
- Use quotes around phrases, e.g. "any discipline", "any class", "risk analyst"
- 2.2 or 2.2 will find all jobs that refer to 2.2, 2ii, 2i and 2.ii

and/or type of work:

- Accountancy & finance [168]
- Advertising, marketing & PR [210]
- Arts & heritage [44]
- Banking & investment [287]
- Charities & social enterprise [77]
- Consultancy [229]
- Data science & analytics [93]
- Education [49]
- Engineering, chemical [35]
- Engineering, civil/structural [32]
- Engineering, electrical/electronic [131]
- Engineering, mechanical/manufacturing [86]
- Environment [31]
- Health & social care [48]
- Human resources [91]
- Human rights [14]
- International development [20]
- IT [350]
- Legal [31]
- Media [29]
- Policy & politics [28]
- Postgraduate study [17]
- Procurement & purchasing [39]
- Property [23]
- Public sector [43]
- Publishing [25]
- Research for PhDs, arts/humanities [16]
- Research for PhDs, science/engineering [50]
- Research for PhDs, social science [21]
- Retail [79]
- Science, hands on [114]
- Science, life [47]
- Science, physical & mathematics [135]
- Start-ups [52]
- Supply chain & logistics [70]
- Other [74]
A few of the big events this term...

- Consultancy Event
- Banking & Finance Event
- Graduate Schemes & Internships Event
- Mathematics Event
- Careers in Economics
- Teaching Event
- Engineering, Science and Technology Event

Weds 25 Oct
4.30-9.00pm
CMS
Your degree is only part of the story…

Across all sectors recruiters look for evidence and proof that:

- you can do the job/course; that you know what it involves; that you want to do it and that you want to do it for/with them

- You have the core skills and experience they require to do the job effectively and the potential to gain more.

- You have the commitment and motivation for the sector, organisation and job
## Competencies employers look for

<table>
<thead>
<tr>
<th>Competency</th>
<th>Skill</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verbal and written communication</td>
<td>Influencing</td>
</tr>
<tr>
<td>Willingness and ability to learn</td>
<td>Negotiation</td>
</tr>
<tr>
<td>Adaptability and flexibility</td>
<td>Self direction</td>
</tr>
<tr>
<td>Teamwork</td>
<td>Organising/project management</td>
</tr>
<tr>
<td>Results driven</td>
<td>Customer service/relations skills</td>
</tr>
<tr>
<td>Problem solving</td>
<td>Presentation skills</td>
</tr>
<tr>
<td>Analytical ability</td>
<td>Research skills</td>
</tr>
<tr>
<td>Initiative</td>
<td>IT skills</td>
</tr>
<tr>
<td>Commercial awareness</td>
<td>Quantitative skills</td>
</tr>
<tr>
<td>Innovation</td>
<td>Languages</td>
</tr>
</tbody>
</table>
Evidence of competencies & motivation

- **Academic work**: grades, awards, scholarships; content; multiple deadlines; analysis; research skills; quantitative skills; IT skills; languages........

- **Extracurricular activities**: student societies; organising concerts, student politics; student media; volunteering; arts; sport; issue campaigning. In roles like: positions of responsibility; finance management; fundraising; event organisation; publicity; representation &/or advocacy; getting published or broadcast; performing .......

- **Work experience**: internships; vacation work; volunteering; shadowing; gap year

- **Competitions** (individual or team based), e.g. entrepreneurship, business, marketing, debating, mooting, writing......

- **Memberships**, e.g. think tanks, political parties, campaigning organisations, professional organisations

- **Going to** employer presentations, open days, information events
Cambridge University doesn’t do “careers in the curriculum” – Careers support is on an opt-in basis

Best advice we give is for you to concentrate on your discipline

We’re here to help you decide what you want to do next, and then help you make it happen
What we offer

Website: register for Sectors, Disciplines, Vacancies, Diary, podcasts, Gradlink, CamCareers

Career Fairs – include vac work/internship options

Briefing sessions/careers panels

Skill Sessions

One to one discussions and CV reviews

Interview practice

Library and free publications, incl. CV Guide (download here)
See you at the Careers Events next Weds 25 Oct

Careers for Mathematicians Event 2017 - Wednesday 25 October
2017, 4.30pm - 7.00pm

Centre for Mathematical Sciences, Wilberforce Road, Cambridge, CB3 0WA

Employers attending our events continuously stress that they are most impressed with those students who have done their research in advance. Do therefore take a look at the flip-book or pdf version of the event programme and the table listing below, to read up on the organisations attending.

Career Opportunities in: Actuarial work, cryptography, forecasting, complex modelling, operational research, complex algorithms and signal processing amongst others. The employers at this event all have graduate opportunities that have mathematical or statistical content sufficiently challenging to attract able mathematicians or physicists.

Quick Queries: Available all day with a Careers Adviser.

Entry is restricted to: Current University of Cambridge students (plus staff and recent alumni) with a strong mathematical background – please bring your University ID card with you to this event. You will be required to swipe your card on entry.

Other relevant events: You will find other employers interested in Cambridge undergraduates and graduates in Michaelmas at our two-day Engineering, Science and Technology Event.

Quantitative Finance 2017 - Wednesday 25 October 2017, 4.30pm - 7.30pm

Centre for Mathematical Sciences, Wilberforce Road, Cambridge, CB3 0WA

Employers attending our events continuously stress that they are most impressed with those students who have done their research in advance. Do therefore take a look at the flip-book or pdf version of the event programme and the table listing below, to read up on the organisations attending.

Career Opportunities in: Asset management, energy trading, financial consulting, hedge funds, investment banking, investment management, quantitative research, trading.

Quick Queries: Available all day with a Careers Adviser.

Entry is restricted to: Current University of Cambridge students (plus staff and recent alumni) with a strong mathematical background – please bring your University ID card with you to this event. You will be required to swipe your card on entry.

Other relevant events: You will find other employers interested in Cambridge undergraduates and graduates in Michaelmas at our two-day Engineering, Science and Technology Event.