

ON PHDs, INDUSTRY, LIFE, ...

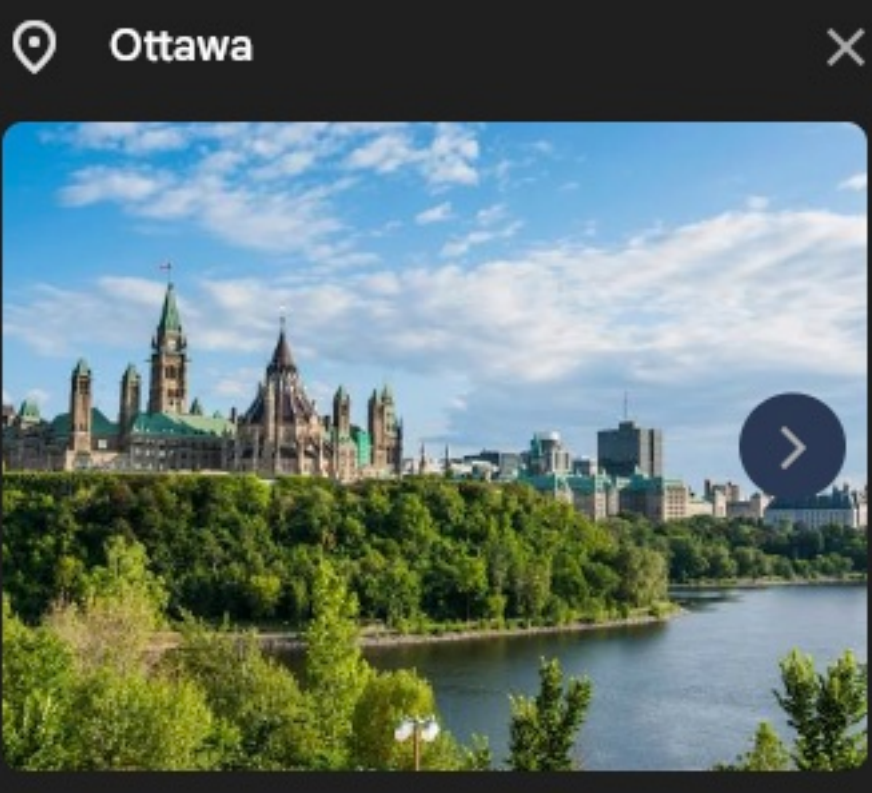
By: Phil Trinh (www.ptrinh.com)

From: Department of Mathematical Sciences, University of Bath

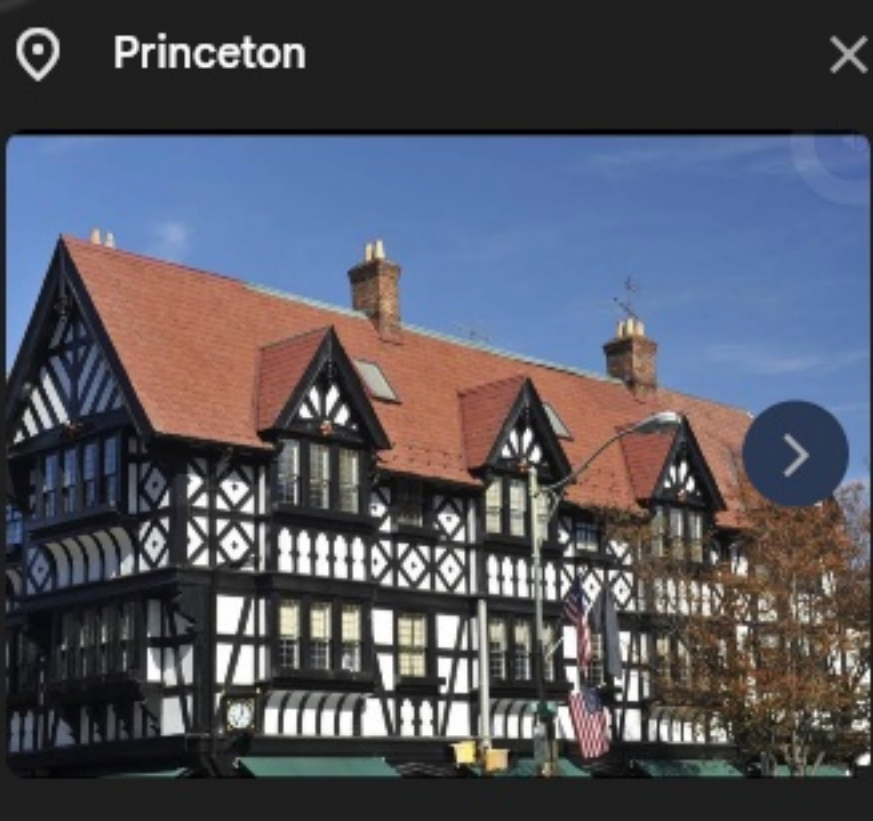


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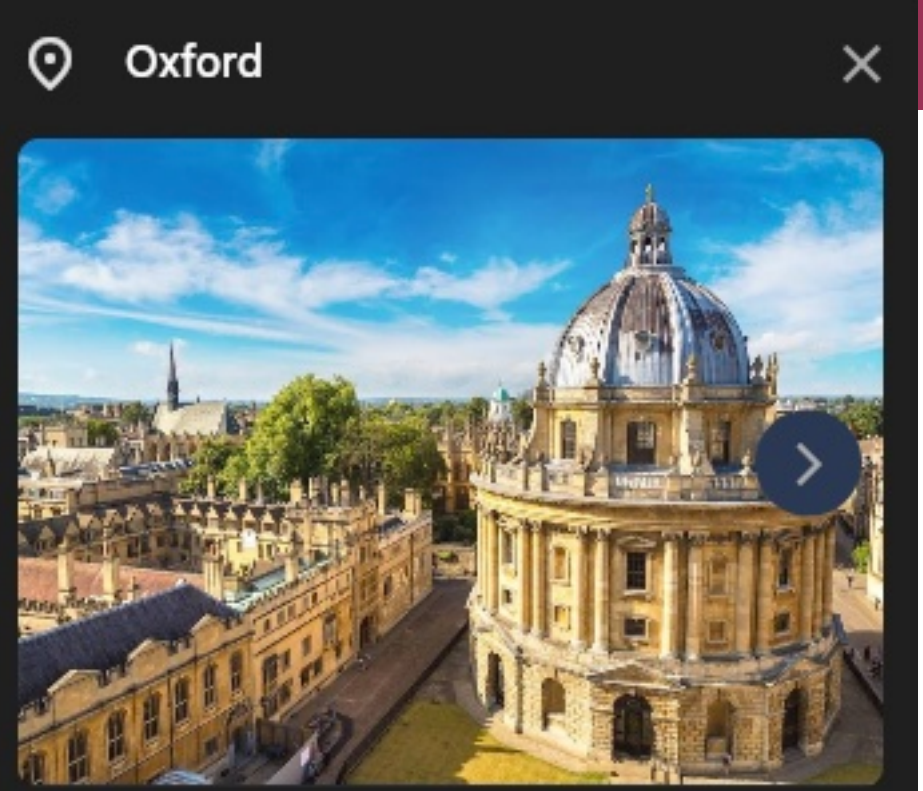
CAVEATS AND WHAT I KNOW



Undergraduate/MSc student (Mathematics) from Ottawa, Ontario, Canada (04-07)

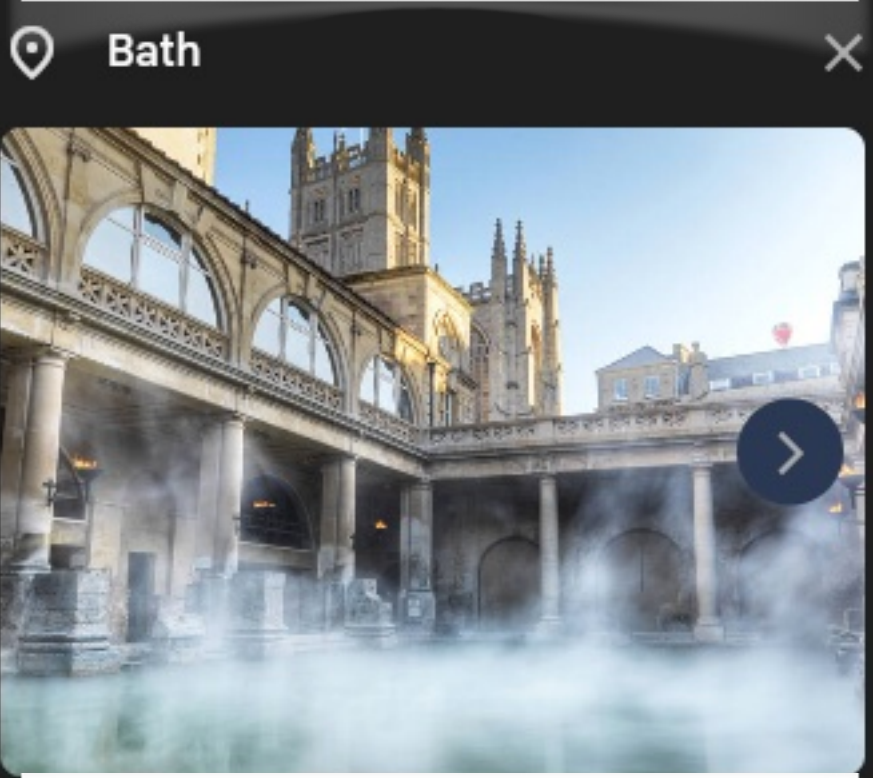


Postdoc in Princeton, USA with Mathematics Department and Dept. Mech. Eng. (10-12)



DPhil in Mathematics in Oxford, UK (07-10)

Darby Fellow at Lincoln College, Oxford; then departmental lecturer with Industrial Mathematics CDT (12-17)



Permanent with Bath; Exec with the Statistical and Applied Mathematics CDT (17-23)

PHDS IN THE UK

Research doctoral degrees awarded			2013	2014	2015	2016	2017	2018	2019	
Institution UKPRN cd	Institution name	Joint submission	Number of doctoral degrees awarded in academic year 20	Number of doctoral degrees awarded in academic year 20	Number of doctoral degrees awarded in academic year 20	Number of doctoral degrees awarded in academic year 20	Number of doctoral degrees awarded in academic year 20	Number of doctoral degrees awarded in academic year 20	Number of doctoral degrees awarded in academic year 20	
10007783	University of Aberdeen		8.00	5.00	6.00	5.50	6.00	6.00	4.45	
10007856	Aberystwyth University / Prifysgol Aberystwyth		1.00	0.00	4.00	0.00	4.00	0.50	2.00	
10007850	The University of Bath		13.17	13.55	13.10	9.50	10.00	13.55	19.50	
10006840	The University of Birmingham		8.60	29.50	11.05	11.20	7.50	14.00	7.00	
10007786	University of Bristol		12.33	18.00	13.80	18.19	21.50	15.05	11.30	
10000961	Brunel University London		8.00	9.00	0.00	7.00	7.00	6.00	2.00	
10007788	University of Cambridge		44.00	46.00	53.50	52.00	46.00	51.50	40.00	
10007814	Cardiff University / Prifysgol Caerdydd		5.00	6.00	2.00	6.50	9.00	8.00	10.00	
10007141	University of Central Lancashire		0.00	0.00	0.00	0.00	0.00	0.25	1.00	
10007848	University of Chester		0.00	0.00	2.00	0.00	0.00	0.00	1.80	
10001478	City, University of London		4.00	3.50	2.00	4.50	2.70	1.00	4.00	
10001726	Coventry University		2.00	1.00	1.00	3.00	4.00	2.00	4.00	
10007852	University of Dundee		2.00	4.00	2.00	3.00	6.50	2.55	3.00	
10007143	University of Durham		12.50	14.50	16.30	9.20	17.50	20.10	9.40	
10007789	The University of East Anglia		4.00	7.00	6.00	6.00	3.00	5.00	5.00	
10007790	University of Edinburgh	(joint submission with Heriot	12.30	12.75	19.80	7.50	12.39	10.48	24.69	
10007791	The University of Essex		3.00	5.00	6.00	2.00	7.00	11.00	3.00	
10007792	University of Exeter		5.95	8.00	8.90	8.25	11.00	16.05	8.30	
10007794	University of Glasgow		9.00	11.00	11.90	10.16	10.65	15.45	11.34	
10007764	Heriot-Watt University	(joint submission with Univer	7.50	13.50	10.00	10.50	7.00	8.50	18.00	
10003270	Imperial College of Science, Technology and Medicine		37.15	31.16	38.02	47.09	46.08	54.15	45.00	
10007767	University of Keele		0.00	1.00	3.00	1.00	3.00	5.00	7.00	
10007150	The University of Kent		5.00	7.00	6.50	8.00	14.50	8.50	11.00	
10003645	King's College London		5.00	3.50	14.00	16.00	16.75	15.00	16.25	
10007768	The University of Lancaster		12.00	11.00	15.00	16.00	17.00	11.00	28.00	
10007795	The University of Leeds		24.25	15.91	10.73	24.16	24.85	32.29	31.05	
10007796	The University of Leicester		5.00	9.00	8.00	13.00	13.00	13.00	10.00	
10007151	University of Lincoln		0.00	0.00	1.00	0.00	0.00	0.00	1.00	
10006842	The University of Liverpool		10.20	12.80	17.53	16.70	21.55	13.40	12.70	
10004048	London Metropolitan University		2.00	2.00	0.00	1.00	0.00	0.00	0.00	
10004063	The London School of Economics and Political Science		5.00	10.00	9.00	12.00	6.00	9.50	7.00	
10004113	Loughborough University		9.00	17.00	14.00	4.00	9.50	6.55	8.70	
10007798	The University of Manchester		31.33	36.73	27.49	24.55	28.25	24.20	33.15	
10007799	University of Newcastle upon Tyne		6.60	2.75	5.30	10.96	6.41	13.13	12.70	
10007154	University of Nottingham, The		18.12	30.75	22.12	18.72	29.62	24.35	27.34	
10007773	The Open University		2.00	3.00	3.00	4.00	2.00	3.00	7.00	
10007774	University of Oxford		56.87	68.91	63.73	58.75	69.34	73.59	77.41	
10007801	University of Plymouth		2.00	2.00	2.00	1.00	2.00	5.00	3.00	
10007155	University of Portsmouth		2.00	1.00	1.00	1.00	4.00	3.00	2.00	
10007775	Queen Mary University of London		6.00	9.00	7.00	13.40	11.90	6.50	15.90	
10005343	Queen's University of Belfast		3.00	3.00	3.00	7.00	2.00	3.00	3.00	
10007802	The University of Reading		8.55	5.50	8.10	10.73	5.10	7.35	9.50	
10005553	Royal Holloway and Bedford New College		3.00	4.00	6.00	6.00	0.00	4.00	1.00	
10007157	The University of Sheffield		15.50	16.00	12.50	18.75	22.50	20.50	22.33	
10007793	University of South Wales / Prifysgol De Cymru		0.00	0.00	1.00	1.00	1.00	3.00	1.00	
10007158	University of Southampton		11.70	19.00	23.95	20.65	20.90	18.40	16.35	
10007803	University of St Andrews		7.56	9.30	7.45	12.00	10.65	8.90	7.35	
10007805	University of Strathclyde		9.00	6.00	9.00	12.00	7.00	15.00	10.00	
10007160	The University of Surrey		2.00	3.00	7.00	4.00	3.00	7.00	4.00	
10007806	University of Sussex		2.00	4.00	4.00	13.00	9.00	21.00	7.00	
10007855	Swansea University / Prifysgol Abertawe		3.00	3.00	6.00	4.00	5.00	4.00	7.00	
10007784	University College London		11.10	17.07	23.00	24.00	17.10	28.00	20.00	
10007163	The University of Warwick		29.75	33.44	36.40	47.45	46.00	34.50	49.13	
10007167	University of York		7.50	8.00	8.50	4.20	13.50	12.80	8.00	

PHDS IN THE UK IN 2023 (*OH HOW THE TIMES HAVE CHANGED...*)

History [\[edit\]](#)



Parts of this article (those related to Section) need to be **updated**. Please help update this article to reflect recent events or newly available information. *(November 2017)*

Initially, DTCs were regarded as a strategic mechanism for increasing capacity in interdisciplinary research activities such as the life sciences interface and complexity science, areas that were difficult to locate within a traditional University's departmental organisation. By 2009, the [Engineering and Physical Sciences Research Council](#) (EPSRC) had widened its focus, announcing funding for 50 new DTCs spanning its entire remit.^{[4][5][6]} In 2011, following the lead of the EPSRC, the [Economic and Social Research Council](#) (ESRC) announced doctoral studentships will be exclusively allocated to a network of 21 accredited DTCs.^[7]

By 2012 the model was adopted by the [Arts and Humanities Research Council](#) (AHRC) in their second call for Block Grant Partnerships, ultimately funding 11 [Doctoral Training Partnerships \(DTPs\)](#) and a further 7 [Centres for Doctoral Training](#) (CDTs) established with a first intake of students in October 2014.

- Landscape of UK graduate students fundamentally changed with introduction of “centres” (around 2010)
- **Today:** Mathematics PhD students in the UK are essentially in two camps:
 - (i) **CDTs** or similar Doctoral Training Centre students;
 - or (ii) **departmental/studentship** PhD students;
- Contrast also with 4-6 year PhDs in the US/Canada.

WHERE IS THE MONEY COMING FROM?

- PhDs are very expensive!
- **Doctoral Training Centres:** Research Councils award CDTs to universities for certain number of years
- **Studentships:**
 - * Research Councils gives universities doctoral training money; this is split into departments and leads to studentships (e.g. Bath had 1.5-5/year);
 - * Industry/Research Council money: this is rare and is based on external grants and funding
- **International students:**
 - * Small proportion (<30%) of UK Research Council funding can go to internationals
 - * International scholarships (Rhodes, Clarendon, Gates-Cambridge, Commonwealth, Fulbright, etc.)
 - * National scholarships from your country to study abroad

DOCTORAL TRAINING CENTRES VS. STUDENTSHIPS

	CDTs	Studentships
Funding and length	~4 years of funding	~3.5 years of funding
Training	Year 1 = additional training, workshops, transferrable skills, etc.	Minimal required training
Cohort	Usually more tightly-woven cohort structure	“Traditional” cohort amongst graduate students
Topic	Often very flexible; needs to fall into CDT theme	Can be constrained, dependent on funding source
Networking	More direct opportunities	Fewer <i>direct</i> opportunities
What’s better for my career/life?	???	???

♥ **Combined model-based and data-driven approaches for inverse problems in imaging**

 University of Bath ▶ Department of Mathematical Sciences

The University of Bath is inviting applications for the following PhD project commencing in September 2024. Overview of the Research. [Read more >](#)



Supervisors: Dr T A Buboa, Dr S Gazzola

📅 10 December 2023

PhD Research Project

■ Competition Funded PhD Project (UK Students Only)

[More Details >](#)

Image Reconstruction for Multi-Modality Imaging

University of Bath ▶ Department of Mathematical Sciences

The University of Bath is inviting applications for the following PhD project, ideally commencing in September 2024. Overview of the Research. [Read more >](#)



Supervisor: Dr M Ehrhardt

26 November 2023

PhD Research Project

 Funded PhD Project (UK Students Only)

[More Details >](#)

♥ **Doctoral research positions available in mathematical sciences and its applications**

University of Bath > Department of Mathematical Sciences

SAMBa (the EPSRC Centre for Doctoral Training in Statistical Applied Mathematics), at the University of Bath, offers a 4-year PhD programme, including initial training to develop breadth of knowledge and research skills. [Read more >](#)



■ **Funded PhD Programme (Students Worldwide)**

 EPSRC Centre for Doctoral Training

[More Details >](#)

HOW THE SYSTEM WORKS

- Most students start in October
- Competition can be tough as there is limited funding; triply tough for internationals
- Apply as widely as appropriate and apply early
- Departments start looking as early as October; earliest interviews typically December; January = busiest.
- Keep an open mind on what you do
- *(Note to self: any secret info to convey?)*

- **If possible, ensure applications are in by end of January.**

WHAT TO DO

1. Search in the appropriate databases (e.g. findaphd.com) and peruse university websites. Ask your tutors, lecturers, advisers, other PhD students for help!
2. You will typically need 2 reference letters; some require more (*Rhodes Scholarship requires 5-8!*). Warn your reference writers well ahead of time (optimally 2 months).
3. *For individual studentships*, contact the supervisor and discuss the research; use this opportunity to gauge their engagement.

For CDTs, peruse the websites to determine the style of the programme. You will need to typically compose a personal statement of interest.
4. *Prepare to be interviewed.*

WHAT IS A CDT INTERVIEW LIKE? (CDT INTERVIEW STYLE 1, TECHNICAL)



Random image of a 'tutorial' from Reading College.

1. Interview can be very technical. Here is a 'real' example from a CDT. Two 30-minute interviews with two interview teams.
2. Two questions per interview — one from each interviewee on a maths challenge, e.g. "Given a matrix A indicating transitions between states, what does A^n represent?"
3. Asking you to explain some of your experience/project;
4. Fewer 'soft' questions ("Why do you want to study here?")
5. Interviews can include surrounding events: campus tour, meeting grad students, meeting staff, etc.

WHAT IS A CDT INTERVIEW LIKE? (CDT INTERVIEW STYLE 2, NON-TECHNICAL)



Random image of a whiteboard meeting ([zdnet.com](https://www.zdnet.com))

1. Interviews can be non-technical — 3 interviewers
2. Questions about your motivation (“What attracts you to this CDT?”)
3. Questions about your prior academics or project/research work
4. Lighter touch on technical questions ... but you should still be ready to discuss your past work
5. Interviews can include surrounding events: campus tour, meeting grad students, meeting staff, etc.

Department of Mathematical Sciences, University of Bath



Discovering the world of PhDs

Graduating with a degree in mathematics? Considering a PhD? Join us to discuss opportunities for PhD study and how to apply. Meet current PhD students and discuss projects with potential supervisors.

not yet fixed! to be announced after summer!

Please register by 6 November if you would like to attend:
<https://www.bath.ac.uk/events/discovering-the-world-of-phds/>



Approx. Wed. 12 Nov. 2025



15:15 to 16:45



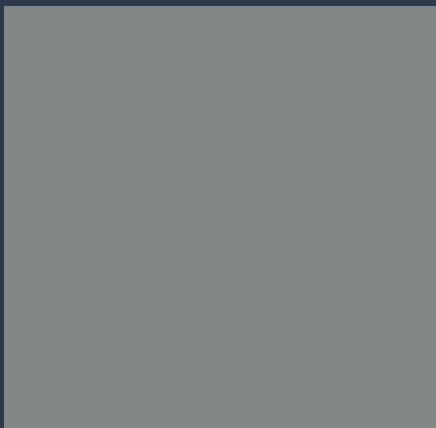
University of Bath



samba.ac.uk



Scan to register





**Centre for Doctoral
Training in
Statistical Applied
Mathematics
(SAMBa)**



Fully-funded PhD studentships in broad areas of mathematical sciences and its applications

What we offer:

- Fusion of applied mathematics, numerical analysis, probability, and statistics
- Choose and shape your own research direction
- Applications across science, engineering and industry
- Integrative Think Tanks: weeklong industrial & interdisciplinary research events
- Support from a diverse cohort in an inclusive environment

Research themes include:

- inverse problems
- image processing
- optimisation
- Monte Carlo methods
- spatio-temporal statistical modelling
- asymptotic analysis
- stochastic processes on graphs and networks
- mathematical and statistical physics
- fluid mechanics
- mathematical machine learning
- interacting particle systems
- dynamical systems

Applications/industrial areas include:

- healthcare
- epidemiology
- biology
- environment and natural hazards
- energy and transportation
- materials imaging and spectroscopy

SAMBa students:

- 113 enrolled since 2014
- 46 graduates: 45% working in industry, 55% in academia

What you'll need:

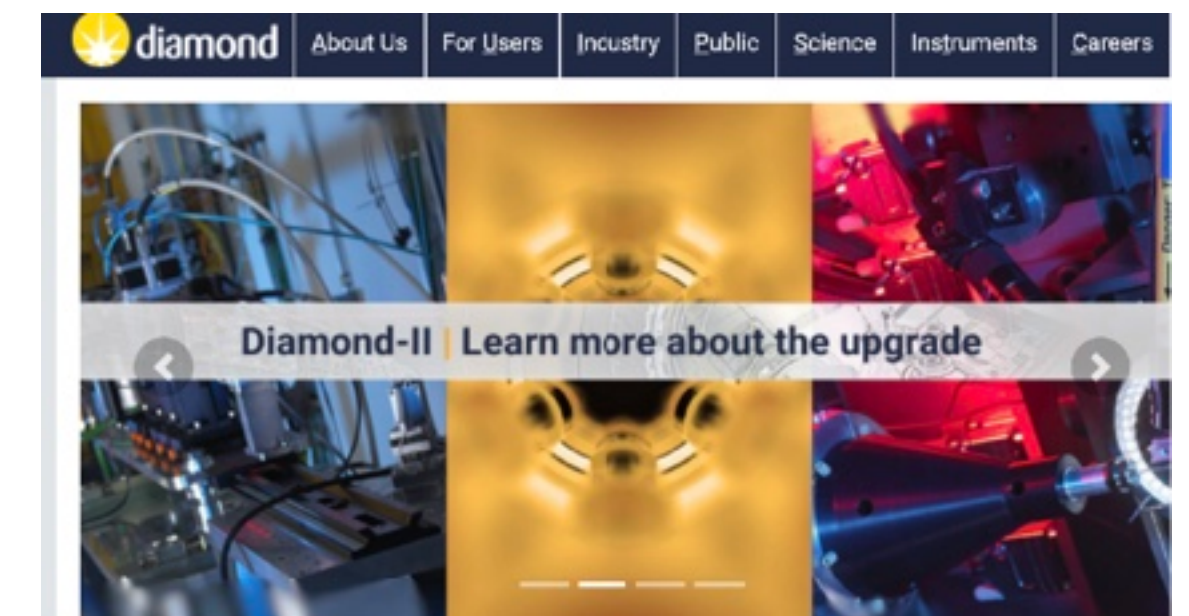
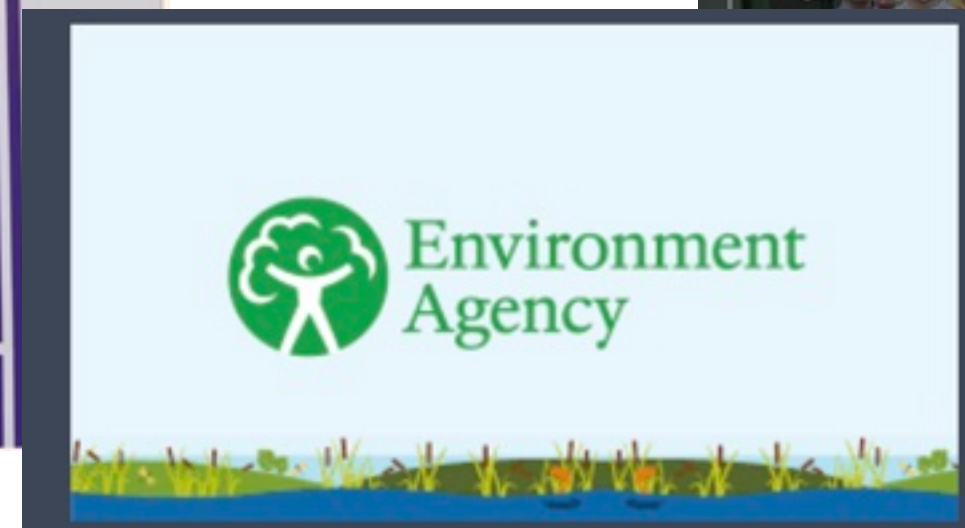
- good degree with high mathematical content
- some research or professional experience



Scan for more
<https://samba.ac.uk/>

INDUSTRY

1. **Academics are bad at highlighting the joys and advantages of industrial careers**
2. There are many interesting roles where mathematicians and statisticians, at different levels, can thrive.
3. A PhD can give you significant preparation for specialised roles in industry. It can also hamper you.
4. Here are some companies and industries we have been involved with:



**125 years
of impact
from science**

Data Scientist (Semantic Search/Recommender Systems).