James Mathews

Curriculum Vitae

6 Elgin Grove, Street
Somerset, BA16 0FS
☎ 07861 459496
✉ jrm214@cam.ac.uk
🖝 http://www.damtp.cam.ac.uk/user/jrm214/

Education

2012–2016 **Ph.D in Aeroacoustics (Applied Mathematics) at the Cambridge Centre of Analysis**, *University of Cambridge*, Cambridge.
Supervisor: Professor Nigel Peake.
- Researched noise generation by aeroengines and aerofoils.
- Submitted thesis in July 2016 and passed viva in August 2016.
- Used simplified mathematical models of aeroengines, aerofoils and the air to calculate novel asymptotic solutions of the Euler equations by using Green's functions.
- Invited to collaborate with industry on the Europe-wide ENOVAL project in 2015.
- Designed, built and commercialised a MATLAB program ready for use on the project.
- Published and presented research at two major international conferences (AIAA/CEAS Aeroacoustics Conferences in Dallas and Lyon) and presented research at five conferences in the UK.
- Invited to give seminar about research in Southampton.
- Attended two European study groups with industry and a graduate modelling camp.
- Worked on diverse industrial mathematics problems such as emotion recognition, flight boarding strategies and flight efficiency in aerospace.

2008–2012 **Masters of Mathematics**, *University of Warwick*, Coventry.
First Class Honours.

2001–2008 **Secondary School and Sixth Form**, *Imberhorne School*, East Grinstead.
A Levels: Mathematics (A), Further Mathematics (A), Physics (A), Economics & Business (A).

Awards

2015 TakeAIM runner up.
Competition run by the Smith Institute enabling young researchers to express for a general audience the potential future impact of their research.

2015 Osborne Reynolds Day finalist.
One of only seven mathematicians and engineers to present research.

2015 SET for BRITAIN finalist.
One of only 30 research mathematicians to present a poster at the House of Commons.

2014 Smith-Knight and Rayleigh-Knight Prize.
Received award from University of Cambridge for my second year Ph.D report.

2014 Group prize for best presentation at 6th OCCAM Graduate Modelling Camp.

2011 IBM Student Recognition Award.
One of only two mathematicians to receive an award for academic excellence.

2010 Outstanding Academic Achievement Award.
One of only two mathematicians to receive an award from Warwick Mathematics Institute.

Skills

Mathematics Green's functions, asymptotics, Fourier transforms, ordinary differential equations, partial differential equations, complex analysis, Euler equations, fluid dynamics and numerical methods.

Programming MATLAB, Python, Fortran (basic), C++ (basic), R (basic).

Software LATEX, Microsoft Office (Word, Excel, PowerPoint), Microsoft Windows, Linux OS.

Experience

2011–2015 **Volunteer mathematics teacher**, *Warwick in Africa*, South Africa, Tanzania and Ghana.

I have been repeatedly selected for a voluntary programme called Warwick in Africa which sends students and teachers to work in African schools for four to six weeks. I have taught mathematics in secondary schools in Johannesburg (2011 & 2013), Morogoro (2012), Accra and Agona Swedru (2014) and Vuwani (2015). Some of my accomplishments as part of the programme include:

- Teaching classes of up to 70 children for ten lessons a day, five days a week.
- Running a mathematics competition to inspire high achieving students.
- Helping to keep a school in Morogoro open during a National Census by devising a new timetable.
- Setting up an after school maths club to support exam preparation in Johannesburg.
- Calling a department meeting in Johannesburg to advise on how to use new resources.
- Designing content for summer schools to boost mathematical achievement and encourage extra curricular activities in Ghana.
- Delivering this content across two schools and seeing some students double their attainment over just two weeks.
- Devising a new timetable in a school in Vuwani and briefing the entire school as to how it would work. The timetable was created so that children could move classrooms for the first time.

2013–2015 **Mathematics supervisor**, *University of Cambridge*, Cambridge.

- Supervised four different courses to three different year groups, teaching two students at a time.
- Evaluated students' work, gave feedback and explained key concepts.

2011–2012 **Mathematics supervisor**, *University of Warwick*, Coventry.

- Supervised a group of five first year students, marking homework and presenting solutions.

2010–2012 **Treasurer**, *University of Warwick Sailing Club*, Coventry.

- Administered the club's bank accounts of around £30k, managing income and expenditure.
- Compiled budgets for subsequent years and negotiated with the SU to secure an increase in funding.
- Worked within a team to run the club and organise two successful sailing events, making a profit of £7k.

2007–2010 **Sailing instructor**, *Weir Wood Sailing Club*, Forest Row.

- Taught people of a wide range of ages and abilities to sail on Royal Yachting Association courses.
- Jointly led a team of instructors during children's sailing camps in 2009 and 2010.

Interests

STEP In June 2014 and June 2015 I marked STEP examination papers and since January 2015 I have been involved in the University of Cambridge's new STEP correspondence course, giving written feedback to sixth form students as they attempt highly demanding problems.

Hockey I am a member of Cambridge South Hockey Club, playing for the 3rd team (2014–2016) and 5th team (2013–2014). Voted 5th team player of the season in 2014.

Sailing I competed for the University of Cambridge at Course Croisière EDHEC (Brest, France) in April 2013. I also competed at the university yachting championships (Portsmouth) in April 2012 and university team racing finals (Southampton) in April 2011 for the University of Warwick.

Fundraising To fundraise for Warwick in Africa I completed the Three Peaks challenge in 2011 and a Coast to Coast cycle in 2012.

Driving I have held a full UK driving licence since April 2008.

References

Professor Nigel Peake
Professor of Applied Mathematics
DAMTP, Centre for Mathematical Sciences
University of Cambridge
Cambridge, CB3 0WA
✉ np100@cam.ac.uk
☎ 01223 339058

Ruth Dorrell
Project Officer: Warwick In Africa
Mathematics Institute, Zeeman Building
University of Warwick
Coventry, CV4 7AL
✉ R.Dorrell@warwick.ac.uk
☎ 024 7657 3450