James Mathews

Curriculum Vitae

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▬ Academic

Sept 2016– **Research Associate in the Department of Engineering**, *University of Cambridge*, Cambridge.
- Based jointly between the University of Cambridge and the University of Southampton.
- Working on applying some of the aeroacoustic methods from my Ph.D to the Europe-wide ENOVAL project.
- Actively collaborating with project partners from academia and industry such as Rolls-Royce, NLR and DLR.
- Commercialised MATLAB program written during the course of my Ph.D to allow its use on the project by all partners.

Sept 2012– **Ph.D in Aeroacoustics (Applied Mathematics) at the Cambridge Centre of Analysis**,
Aug 2016 *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 ENOVAL project in 2015.
- 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 at the University of 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.

Sept 2008– **Masters of Mathematics**, *University of Warwick*, Coventry.
June 2012 First class honours.

▬ Awards

Nov 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.

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

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

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

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

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

July 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), HTML (basic).

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

Other experiences

Sept 2013– June 2016 **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.

July 2011– Aug 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.
- 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.

Apr 2010– Apr 2012 **Treasurer**, *University of Warwick Sailing Club*, Coventry.
- Administered the club's cash flow 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.

Nov 2007– Aug 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

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
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