

Jessica Williams | D.Phil. Student

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Personal Details: Dual British/American citizenship

Education

University of Oxford – D.Phil., Industrially Focused Mathematical Modelling (InFoMM) Sept. 2019 (Expected)

- Thesis topic: *Fluid dynamics of kidney stone removal*
- Supervisors: Prof. Sarah Waters, Prof. Derek Moulton, Mr. Ben Turney (University of Oxford)
- Research in collaboration with Boston Scientific corporation

University of Oxford – M.Sc., Mathematical Modelling & Scientific Computing Sept. 2015

- Distinction on dissertation, "*Indentation of a floating film: The Role of Elasticity and Incompressibility*"

UCLA – B.Sc., Mathematics/Applied Science (Medical & Life Sciences) June 2014

- GPA: 3.801 – Graduated with honours (Cum Laude)

Publications & Patents

J.G. Williams, B.W. Turney, D.E. Moulton, S.L. Waters March 2019 (Expected)

The effect of geometry on resistance in elliptical annular pipe flows

Journal of Fluid Mechanics, 2019 (Submitted – pre-print selected as finalist for Lighthill-Thwaites Prize)

J.G. Williams, B.W. Turney, N. Rauniyar, T. Harrah, S.L. Waters, D.E. Moulton Nov. 2018

The fluid mechanics of ureteroscope irrigation

Journal of Endourology, January 2019, Volume 33, Number 1

Named inventor on U.S. Patent 20,180,289,248: *Access Device Methods of Using the Same* Oct. 2018

Additional Academic Projects

Thermal Cracking of Composite Electrodes July – Sept. 2016

- Research in collaboration with Elkem (Kristiansand, Norway)

Prizes & Awards

Finalist for IMA Lighthill-Thwaites Prize – British Applied Mathematics Colloquium April 2019

- Awarded for submission of *The effect of geometry on resistance in elliptical annular pipe flows* pre-print
- Presented to adjudicating panel in the *IMA Lighthill-Thwaites Prize Minisymposium* session at BAMC, 2019

UK Fluids Network “Best Presentation Prize” – UK Fluids Conference Sept. 2018

- Awarded for talk on Ph.D. research at the UK Fluids Conference 2018 (University of Manchester)
Prize sponsors: UK Fluids Network; Journal of Fluid Mechanics; Cambridge University Press

- SIAM Prize for “Best Student Talk”** – British Applied Mathematics Colloquium April 2017
- Awarded for talk on Ph.D. research at BAMC 2018 (University of Surrey)
Prize sponsors: Society for Industrial and Applied Mathematics
- Poster Prizes** – ENIUS Stent School & QBIOX Colloquium Sept. 2018 & Mar. 2017
- Won poster prizes at the ENIUS Stent School (2018) and QBIOX Colloquium (2017)
 - Prizes given based on oral and visual presentation scores
- EPSRC Award** – Funding to cover doctoral research with a maintenance grant Sept. 2015

Teaching Experience

- College Tutor** – St. Anne’s College, University of Oxford Oct. 2017 – June 2019
- Responsible for reviewing course material with small groups of 2-3 undergraduate students; holding review classes; participating in the selection committee for incoming undergraduates by note-taking and conducting interviews
 - Courses: Geometry; Dynamics; Fluids & Waves; Continuous Mathematics for Computer Sciences; Mathematical Modelling in Biology
- Departmental Tutor/TA** – Mathematical Institute, University of Oxford
- Responsible for presenting material/marketing work of approx. 15 undergraduate/master’s students
 - Courses: Applied Partial Differential Equations, Mathematical Physiology, Nonlinear Systems & Further Mathematical Methods

Leadership

- Middle Common Room (MCR) President** – Mansfield College, University of Oxford Dec. 2016 – June 2017
- Duties included: chairing meetings, handling communications and coordinating MCR members
- MCR Vice President** – Mansfield College, University of Oxford Sept. 2016 – Dec. 2016
- Duties included: managing funds, restocking supplies, organizing events

Community Service

- Oxford Maths Ambassador** – Mathematical Institute, University of Oxford Oct. 2018 – present
- Duties include: Helping run outreach events in the department
- Research Group Student Coordinator** – Mathematical Institute, University of Oxford Dec. 2017 – present
- Duties include: Meeting with new students and attending departmental meetings
- Executive Committee for Friday Socials** – Mathematical Institute, University of Oxford April 2017 – June 2018
- Duties included: organising and running weekly social hour in the department
- Member of MCR Social Committee** – St. Peter’s College, University of Oxford Sept. 2014 – June 2015
- Duties included: organising and running social and welfare events

List of Presentations

Conferences:

British Applied Mathematics Colloquium (University of Bath) <ul style="list-style-type: none">• Lighthill-Thwaites Prize presentation “Fluid mechanics of kidney stone removal”	April 2019
71st Annual APS DFD Meeting (Georgia World Congress Centre) <ul style="list-style-type: none">• Oral presentation “Mathematical modelling of ureteroscope irrigation”	Nov. 2018
UK Fluids Conference (University of Manchester) <ul style="list-style-type: none">• Oral presentation “Mathematical modelling of ureteroscope irrigation” (awarded prize)	Sept. 2018
World Congress of Biomechanics (The Convention Centre Dublin) <ul style="list-style-type: none">• Poster presentation “The fluid mechanics of ureteroscope irrigation”	July 2018
British Applied Mathematics Colloquium (University of Surrey) <ul style="list-style-type: none">• Oral presentation “Mathematical modelling of ureteroscope irrigation” (awarded prize)	April 2017

Miscellaneous:

3-Minute Thesis Competition (Departmental 3-minute thesis competition) <ul style="list-style-type: none">• Slide titled “Fluid mechanics of kidney stone removal”	Nov. 2018
ENIUS “Computational approaches to ureteric stent design” Training School <ul style="list-style-type: none">• Poster presentation “The fluid mechanics of ureteroscope irrigation” (awarded prize)	Sept. 2018
Oxford/Cambridge Applied Maths Meeting (Woolly Owl) (University of Cambridge) <ul style="list-style-type: none">• Selected as one of six Oxford applied mathematics graduate students to represent the department at this biannual meeting (member of winning Oxford team)	June 2017
Quantitative Biology in Oxford (QBIOX) Colloquium <ul style="list-style-type: none">• Displayed poster (awarded poster prize)	March 2017
“Nuffield Department of Surgical Sciences” Research Away Day <ul style="list-style-type: none">• Displayed poster and gave presentation to medical researchers and practitioners	Jan. 2017

Additional presentations on Ph.D. research given to interdisciplinary industrial collaborators and mathematicians within the Oxford Mathematics department:

- InFoMM Annual Meetings (2017-2019)
- InFoMM Group Meetings (2017-2019)
- Regular meetings with Boston Scientific Corporation (2016-2019)

Professional Society Memberships

SIAM – Society for Industrial and Applied Mathematics (Graduate Student Membership)

Jan. 2018 – 2019

IMA – Institute of Mathematics and its Applications (Associate Membership)

Nov. 2016 – 2019

Other Skills & Abilities

Programming Languages – Python, C++, MATLAB, Mathematica

Computing Abilities – Regular user of LaTeX, Inkscape, Microsoft Office software

Languages – Taken university courses in French, Serbian & Croatian

Music – Choir: Mansfield College Chapel Choir (2017-2019), UCLA Chorale (2011-2013), Los Robles Master Chorale (2010-2011), Piano: Grade 7 Certificate of Merit (2011)

Endurance Events – Walked 100 km in under 24 hours as part of the Cotswold Way Challenge to raise money to fund cancer research (July 2017)