

Jonah A.J. Duncan

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Research Interests

Geometric analysis, analysis of partial differential equations, differential geometry, conformal geometry

Education

- **University of Oxford, Keble College** **Oxford, UK**
DPhil in Mathematics *2017 – Present*
 - EPSRC Centre for Doctoral Training (CDT) in Partial Differential Equations
 - Thesis: Estimates and regularity for some fully nonlinear equations in conformal geometry
 - Supervisor: Prof. Luc Nguyen
- **University of Warwick** **Warwick, UK**
MMath in Mathematics *2013 – 2017*
 - Graduated with first class honours
 - Dissertation: The Cauchy problem for the curve shortening flow of a finite length Jordan curve
 - Supervisor: Prof. Peter Topping

Preprints

- J.A.J. Duncan and L. Nguyen. *Local pointwise second derivative estimates for strong solutions to the σ_k -Yamabe equation on Euclidean domains* (2020), arXiv preprint: <https://arxiv.org/abs/2009.06362>
- (In preparation) *Regularity for the σ_k -Yamabe equation and a priori estimates in the negative case*
- (In preparation) *A priori estimates for a perturbed σ_2 -Yamabe equation on 3-manifolds*

Further Research Experience

- **PDE CDT mini project** **Oxford, UK**
The Kähler-Ricci flow on P^1 -bundles over CP^n and the minimal model program *2018*
 - Supervisor: Prof. Andrew Dancer
- **PDE CDT mini project** **Oxford, UK**
Existence of conformal metrics with positive Ricci curvature on 4-manifolds *2018*
 - Supervisor: Prof. Luc Nguyen
- **Undergraduate Research Bursary, London Mathematical Society** **Warwick, UK**
Zoll manifolds and their interactions with complex and symplectic geometry *2016*
 - Awarded a summer research bursary of £1440 by the London Mathematical Society
 - Supervisor: Prof. Weiyi Zhang

Teaching

- **Class Tutor (leading the classes)** **Oxford, UK**
Mathematical Institute, University of Oxford *2019 – Present*
 - 3rd year undergraduate courses: Functional Analysis I, Functional Analysis II

- 4th year undergraduate/masters courses: Functional Analytic Methods in PDEs, Fixed Point Methods for Nonlinear PDEs

College Tutor (leading small tutorials and marking work)

Oxford, UK

- *St. Edmund Hall, University of Oxford*

2019 – 2020

- 1st year undergraduate courses: Multivariable Calculus, Fourier Series and PDEs

Teaching Assistant (marking work for classes, occasionally presenting)

Oxford, UK

- *Mathematical Institute, University of Oxford*

2018 – 2019

- 3rd year undergraduate courses: Functional Analysis I, Functional Analysis II

Talks

- PDE CDT Lunchtime Seminar, University of Oxford (21st January 2021)
- CDT Student Conference, hosted online by the University of Cambridge (9th December 2020)

Conferences Attended

- *Nonlinear Geometric PDEs*, Banff International Research Station (May 2019)
- *Mathematics and Science: In Honour of Sir John Ball*, University of Oxford (May 2018)

Awards and Scholarships

- EPSRC Scholarship, Centre for Doctoral Training in Partial Differential Equations (2017 – Present)
- Undergraduate Research Bursary, London Mathematical Society (2016)

Service and Responsibilities

- Co-organiser of the Oxford PDE Student Seminar (2019 – present)
- Assistant interviewer for undergraduate admissions to Worcester College, Oxford (Dec 2020)
- Marking of Mathematics Admission Test (MAT) for undergraduate admission to Oxford (Nov 2019)
- Personal mentor for incoming undergraduate student at Warwick (2016–2017)

Skills

- **Computing:** LaTeX, Python (basic)
- **Languages:** English (native), Spanish (AS Level)