JACK THOMPSON

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SYNOPSIS

Jack is a PhD candidate in mathematics at the University of Western Australia. His research interests are in the qualitative properties and regularity theory of partial differential equations and integro-differential equations.

EDUCATION

Doctorate in Philosophy   2021 – present
University of Western Australia

Bachelor of Mathematics (Honours)   2020
University of Queensland   GPA: 7/7

First Class Honours
Joint recipient of the Ethel Raybould Prize in Mathematics for the greatest proficiency in the year.
Two time recipient of Dean's Commendation for Academic Excellence.

Bachelor of Mathematics   2017 – 2019
University of Queensland   GPA: 6.83/7

Five time recipient of Dean's Commendation for Academic Excellence.

HONOURS AND AWARDS

Enid Russell Scholarship   2021

Award of $5 000 to a resident of St Catherine's College who displays strong leadership qualities, academic potential, and embodies the pursuit of excellence.

Ethel Raybould Prize in Mathematics   2020

Awarded to the honours student in the field of mathematics at the University of Queensland with the greatest proficiency for the year.

Seven time recipient of Dean's Commendation for Academic Excellence   2017–2019

Awarded each semester to a student at the University of Queensland who has displayed outstanding academic achievements.

AMSI Travel Grant   Jan. 2020

Received a travel and accommodation scholarship from the Australian Mathematical Sciences Institute (AMSI) worth $2 066 to study two graduate level courses at La Trobe University, Melbourne. These scholarships were awarded on a competitive basis.

ARTICLES AND PREPRINTS

Preprints

[1]   Serena Dipierro, Giorgio Poggesi, Jack Thompson, and Enrico Valdinoci. "The role of antisymmetric functions in nonlocal equations". 2022. DOI: 10.48550/ARXIV.2203.11468. URL: https://arxiv.org/abs/2203.11468.

[2] Serena Dipierro, Jack Thompson, and Enrico Valdinoci. "On the Harnack inequality for antisymmetric s-harmonic functions". 2022. DOI: 10.48550/ARXIV.2204.01272. URL: https://arxiv.org/abs/2204.01272.

PRESENTATIONS

Invited Talks

- AustMS Annual Meeting. December 2022.

- *On an overdetermined problem involving the fractional Laplacian.* Australian Geometric PDE Seminar. August 2022.

- *On an overdetermined problem involving the fractional Laplacian.* AustMS Annual Meeting. December 2021.

Reading Courses

- *Special Solutions to Ricci Flow: Einstein Metrics and Ricci Solitons Australia Geometric PDE seminar.* October 2021. Reading course on Ricci flow.

- *The Leray Projection UQ Analysis Seminar.* August 2021. Reading course on the analysis of the Navier-Stokes equations.

- *An Introduction to Morse Theory and Handle Decompositions.* As part of a reading course in algebraic topology. October 2020.

- *Local Estimates via the Maximum Principle for Mean Curvature Flow.* UQ Analysis Seminar. August 2020. Reading course on mean curvature flow

- *Optimal Tranport: The Restriction Property.* UQ Analysis Seminar. March 2020. Reading course on optimal transport.

- *Weak Convergence Methods: Concentrated Compactness.* UQ Analysis Seminar. September 2019. Reading course on weak convergence methods for variational PDE.

- *Applications of the First Variation Formula for Minimal Submanifolds.* UQ Analysis Seminar. April 2019. Reading course on minimal surfaces.

- *Introduction to Geodesics and Convex Neighbourhoods.* Given as part of a reading course I took on Riemannain Geometry in Sem. 1, 2019.

Other

- *On the Uniqueness of Conformal Metrics with Prescribed Curvature.* Presentation for the fulfilment of my Honours degree. October 2020.

- *Topological Degree and its Applications to Partial Differential Equations.* This was a presentation on a undergraduate research project I did in Sem. 1, 2019. June 2019.

RESEARCH PROJECTS

Doctorate in Philosophy
Feb. 2021 – present

Supervisors: Prof. Enrico Valdinoci, Prof. Serena Dipierro, Prof. Lyle Noakes.

Honours Research Project
Feb. 2020 – Nov. 2020

On the Uniqueness of Conformal Metrics with Prescribed Curvature
Supervisor: Dr Artem Pulemotov, Dr Timothy Buttsworth

Undergraduate Research Project
Feb. 2019 – Jun. 2019

Topological Degree and its Applications to Elliptic Partial Differential Equations
Supervisor: Prof. Joseph Grotowski

TEACHING EXPERIENCE

Part-time Associate Lecturer (MATH1012)
Feb. 2022 – Present

University of Western Australia

- Coordinated weekly practicals and weekly online assignments.

- Organised mid-semester exam and helped with the organisation of the final exam.

- Led weekly workshops as well as weekly student consultations.

Teaching Assistant
Feb 2019 – Present

University of Western Australia (Feb. 2021 – Present)
University of Queensland (Feb. 2019 – June 2021)

- Led weekly workshops for several undergraduate courses. As of September 2022, I have taught 19 classes (16 in-person, 3 online). See my website for complete list of subjects taught.

- At Uni. of WA, this included mid-semester/final exam marking as well as exam invigilation.

- At Uni. of QLD, this included the regular evaluation and grading of student assignments.

Tutor
Feb. 2021 – Nov. 2020

St Catherine's College, Perth

- Ran weekly tutorials for several UWA maths courses.

- See below for complete list of subjects taught.

Private Tutor
Feb. 2016 – Oct. 2018

Self-employed

- Privately tutored high school students, adapting to their needs and learning styles.

- Communicated with parents to organise session times and to discuss the student's progress.

SERVICE

Organisation of Seminars

- In Semester 2, 2022, I co-organised a weekly seminar series aimed at undergraduate students. Speakers were postgraduate students who presented a range of subjects across physics and mathematics. The intention of the talks was to inspire students to pursue higher level research as well as provide a great opportunity for students to interact with postgraduate students and staff.