JAKOB SLOAN

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RESEARCH PROJECTS

Master's Thesis

📅 2023-2024

- Under Nora Ganter.
- Expositional text, aimed at beginning math or physics graduate students, developing the theory of $\mathcal{D}$-modules and operator product algebras in relation to field theory and geometric variational calculus.

Undergraduate Research Project

📅 2021

- Under Volker Schlue.
- Small research project regarding the geometry of de Sitter/anti de Sitter space-times.

EXPERIENCE

Volunteer Math Tutor

Institute for Enquiring Minds

🗓 Ongoing   📍 Melbourne, Australia

- Volunteer math tutor for high school students.

University Math Tutor

University of Melbourne

📅 Feb 2023 - Ongoing   📍 Melbourne, Australia

- Position equivalent to TA.
- Linear algebra & Calc 2 taught.

MATHEMATICAL ACTIVITIES

Speaker at MATRIX

📅 Nov 2024

- 2-week invitational research retreat on Tensor Categories, Quantum Symmetries, and Mathematical Physics.
- Gave seminar on pseudo-tensor categories and chiral algebras.

Co-Organiser for GW-theory reading group

📅 Oct 2024 – Ongoing

- Gave seminar on enumerations in quantum cohomology in relation to Gromov-Witten theory.

Co-Organiser for K3-surfaces reading group

📅 Feb 2024 – July 2024

- Spoke on the Torelli theorems; related topics on moduli spaces.

Assorted Seminars

📅 2023 – 2024

Talks given by me in seminars organized by N. Gnater, J. Knapp, T. Quella; D. Ridout.

- Braided monoidal categories and the cobordism category.
- Ellptic Curves as Riemann surfaces and as groups.
- Phases in gauge theories.

EDUCATION

M.Sc. in Mathematics

University of Melbourne

📅 Feb 2023 – Dec 2024

Supervisor: Nora Ganter
Thesis: Introductory $\mathcal{D}$-Modules & Field Theory

B.Sc. in Mathematics

University of Melbourne

📅 Feb 2020 – Dec 2022

SCHOLARSHIPS

School of Maths & Stats Academic Excellence Scholarship

University of Melbourne

📅 2023–2024

Awarded 4 times over 2 years.

Vacation Research Scholarship

University of Melbourne

📅 2021

Research project/scholarship offered to academically achieving students.

REFEREES

A/Prof. Nora Ganter
@ University of Melbourne
✉ nganter@unimelb.edu.au

A/Prof. Diarmud Crowley
@ University of Melbourne
✉ dcrowley@unimelb.edu.au

Sr. Lect. Gufang Zhao
@ University of Melbourne
✉ gufangz@unimelb.edu.au

LANGUAGES

English ●●●●●

French ●●●●○

Russian ●●●○○