Tobias Boorman | Curriculum Vitae

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Personal Overview

I am a final year Theoretical Physics PhD candidate working at the University of St Andrews under the supervision of Dr Bernd Braunecker. Having recently submitted my thesis, I seek a work environment that is both technically challenging and rewarding, allowing me to contribute the skills I have gained from both inside and outside of academia.

My present research concerns open quantum system dynamics in strongly correlated materials, which has proven to be theoretically rich, involving ventures into topics such as finite temperature quantum field theory, Luttinger liquid theory, and quantum thermodynamics. Complementing analytical approaches, numerical simulations have played a big role in my work. Due to this, I have gained considerable programming knowledge, with languages such as Python, C++, Mathematica, R, and LaTeX, driving my research and publications.

The experience I have gained has not been exclusively technical. In fact, I have demonstrated management capability in co-supervising summer project students and organising seminar series, confident communication in teaching and presenting my research at conferences, and a strong team-working ability through regular whiteboard sessions with colleagues and group meetings.

Lastly, I have also gained hands-on experience outside of academia in the field of printable electronics. Responsibilities for these roles included the fabrication and testing of sensors, mathematical modelling, and interacting with clients.

Education and Qualifications

PhD Theoretical Physics, The University of St Andrews (2020–2024).

MSci Hons Theoretical Physics with Mathematics (1^{st}), Lancaster University (2016–2020).

Publications

Exact results and analytic approximations for propagators of massive real scalar fields in one spatial dimension - To be submitted.

Diagnostics of entanglement dynamics in noisy and disordered spin chains via the measurement-induced steady-state entanglement transition - Phys. Rev. B 105, 144202 (2022).

Internship Experience (see LinkedIn for details)

Technical Assistant: PST Sensors Europe, Aug–Sep 2018.

Business Development Intern: Centre for Process Innovation, Aug–Sep 2016 and Jul–Aug 2017.

Summer Intern: IBEX Innovations, Jun 2016.

Select Conference Presentations

IOP Condensed Matter and Quantum Materials, 2021.

IOP General Conference of the Condensed Matter Division of the European Physical Society, 2022.

DPG Spring Meeting of the Condensed Matter Section, Dresden, 2023.

Seminar Chairing and Organisation

Quantum Information Scotland (QUISCO) Network Seminars, 2020-2021.

St Andrews Theory Discussion, 2022-2023.

Teaching and Marking

Quantum Mechanics 1, Martinmas semester 2021

Lagrangian and Hamiltonian Dynamics, Candlemas semesters 2022 and 2023

References

Available upon request