

Ophelia Evelyn Sommer

osommer@g.harvard.edu Copenhagen, Denmark +45 20740114 orcid.org/0000-0003-3958-9951

Research Experience

MASTERS PROJECT IN OPTICAL FLUX LATTICES WITH PROF NIGEL COOPER — (2022)

- Studied the use of Optical Flux Lattices to create bosonic Quantum Hall states with Caesium.
- Used **Julia** for extensive numerical simulations.

RESEARCH INTERNSHIP IN MANY BODY PHYSICS WITH DR. DAVID LUITZ AND DR. FRANCESCO PIAZZA — (SUMMER 2020)

- Studied relaxation hierarchies of operators on IBM's Quantum Computers at the MPIPES.
- The resulting paper is published in PRR <https://doi.org/10.1103/PhysRevResearch.3.023190>.
- Used **Python** for implementing quantum circuits, data processing/analysis and **C++** for numerical simulations.

RESEARCH INTERNSHIP IN MANTLE CONVECTION UNDER DR. JOHN F. RUDGE
— (SUMMER 2019)

- Performed numerical simulations of Boussinesq fluid flow in a two viscosity layer model of the mantle.
- Derived surface topography and gravity response kernels for mantle model.
- Used **ASPECT** for fluid simulations. **Python** for data processing/analysis.

Education

Harvard University — Theoretical Physics (Doctorate)

2022-2027 | Expected completion time

TRINITY COLLEGE, UNIVERSITY OF CAMBRIDGE — PHYSICS
(NATURAL SCIENCES B.A./M.SCI.)

2018-2022	Part III	Class I (89.5%)
	Part II	Class I (88.4%)
	Part IB	No class (COVID)
	Part IA	Class I (83.8%)
	Awards:	
2021	Hartree and Clerk Maxwell Prize	
	<i>Top Physics Bachelor Student in Cambridge</i>	
2021	Ver Heyden de Lancey Prize	
	<i>Most Distinguished Bachelor Students in Trinity College</i>	
2021	Elected Senior Scholar	
2019	Elected Junior Scholar	

RYSENSTEEN GYMNASIUM

2015-2018 | GPA: 12.0/12
A-levels: Physics, Mathematics, Chemistry, Biotechnology, History and Danish
Extended essay: Landau and mean-field theory for $O(n)$ models.

Achievements and further roles

IUPAP AC5 EARLY CAREER SCIENTIST PRIZE — (2022)

FIRST PLACE IN PLANCKS COMPETITION — (2022)

THIRD PLACE IN PLANCKS COMPETITION — (2021)

THIRD PLACE IN INTERNATIONAL OLYMPIAD IN THEORETICAL PHYSICS — (2020)

2 × INTERNATIONAL PHYSICS OLYMPIAD SILVER MEDALS — (2017 AND 2018)

Came first/second in Danish finals in 2018/2017. Achieved best ever Danish rank in international competition in 2018.

CO-CHAIR, SPEAKER LIASON CAMBRIDGE UNIVERSITY PHYSICS SOCIETY — (2019-2021)

Responsible for inviting speakers, arranging logistics and topics for 6 talks in 2019/2020. Arranged student led series of talks and social events, hosted a LaTeX workshop, created a physics oriented careers conference, managed committee and organised 16 talks by academics in 2020/2021. Chaired the majority of these talks, including some with ~400 participants.

Further Skills

Computational Python, Julia, C/C++, Vim, git, Java, Matlab, LaTeX, Linux, SML, ASPECT.

Languages Danish (fluent), English (fluent).

Examinations taken

Part III (Fourth Year)

Research Project (Synthetic Magnetic Fields for Ultracold Atoms), General Physics Paper, Atomic and Optical Physics, Advanced Quantum Condensed Matter Physics, Particle Physics, Theories of Quantum Matter, Quantum Field Theory, Advanced Quantum Field Theory, Advanced Statistical Mechanics, Phase Transitions, Quantum Simulation, and Superconductivity and Quantum Coherence.

Part II (Third Year)

Computational Exercises, Research Review (Optimal Fluctuations and Gapless Superconductivity), Theoretical Physics I (Classical Field Theory), Theoretical Physics II (Topics in Quantum Physics), Thermal and Statistical Physics, Relativity, Advanced Quantum Physics, Optics and Electrodynamics, Astrophysical Fluid Dynamics, Quantum Condensed Matter Physics, and Soft Condensed Matter Physics.

Part IB (Second Year)

Physics A, Physics B, and Mathematics.

Part IA (First Year)

Computer Science, Mathematics, Material Science, and Physics.