Aleksander Lasek — CV

8645 Greenbelt Rd T1 – Greenbelt, 20770 MD – USA
2029600179 • alasek@umd.edu

Education

University of Cambridge — **Cambridge, UK**
PhD Physics — *2017–2021*

University of Cambridge — **Cambridge, UK**
MASt Physics — *2013–2014*

Durham University — **Durham, UK**
BSc Physics — *2010–2013*

PhD Thesis

Title: *Numerical and theoretical study of spin qubit dynamics*

Supervisor: Prof Crispin Barnes

Description: An investigation of quantum systems focused on quantum computing, using a GPU-accelerated quantum solver created during my degree.

Publications

- *Entanglement generation via power-of-swap operations between dynamic electron-spin qubits, Hugo V. Lepage, Aleksander A. Lasek, David R. M. Arvidsson-Shukur, and Crispin H. W. Barnes, Phys. Rev. A 101, 022329 (2020)*
- *Quantum advantage in postselected metrology*, David RM Arvidsson-Shukur, Nicole Yunger Halpern, Hugo V Lepage, Aleksander A Lasek, Crispin HW Barnes, Seth Lloyd, Nat Commun 11, 3775 (2020)
- *Isolation and manipulation of a single-donor detector in a silicon quantum dot*, A. A. Lasek, C. H. W. Barnes, T. Ferrus, Phys. Rev. B 106, 125423 (2022)
- *Experimental observation of thermalisation with noncommuting charges*, A. A. Lasek *et al*, PRX Quantum 4, 020318 (2023)
- *Non-Abelian symmetry can increase entanglement entropy*, S. Majidy, A. A. Lasek, D. A. Huse, and N. Yunger Halpern , Phys. Rev. B 107, 045102 (2023)
- *Pulse-controlled qubit in semiconductor double quantum dots*, A. A. Lasek *et al*, arXiv preprint; https://arxiv.org/abs/2303.04823
- *Noncommuting conserved charges in quantum thermodynamics and beyond* S. Majidy, W. F. Braasch Jr, A.A. Lasek, T. Upadhyaya, A. Kalev, N. Yunger Halpern, arXiv preprint; arXiv:2306.00054

Teaching and Outreach

College supervisor: Supervising NST Maths 1A course in 2017 and 2018

Tutor: Tutoring young students interested in Physics for Cambridge Immerse in 2017, 2018,2020

Experience

University of Maryland **College Park, USA**
Postdoc *Sept 2021– Present*
Working on noncommuting quantum thermodynamics.

University of Cambridge **Cambridge, UK**
PhD Student *Sept 2017–June 2021*
Theoretical and computational study of spin and charge qubits trapped in single and double quantum dots formed by Surface Acoustic Waves (SAWs)

Tutor **Kielce, Poland**
Private Physics/Maths Tutor *June 2015–Sept 2017*
Teaching physics and maths to high school students and university applicants in my home town

WSIntegration **Surrey, Uk**
Software Engineer *August 2014–July 2015*
Development of banking data manipulation software

CERN **Geneva**
Summer Student *June–Sept 2013*
An extremely competitive internship position that involved working on a computational project.

References

Crispin Barnes, chwb101@cam.ac.uk: Cambridge PhD supervisor

Nicole Yunger Halpern, nicoleyh@umd.edu: UMD PI

Thierry Ferrus, taf25@cam.ac.uk: Hitachi supervisor and collaborator