

AAKASH LAKSHMANAN

Chicago, IL, USA | Oxford, UK
aakash.lakshmanan@balliol.ox.ac.uk
<http://aakashl.com>

EDUCATION

University Of Oxford

October 2017 - Present

Joint Master's in Mathematical and Theoretical Physics (MMathPhys)

1st with Distinction in Preliminary (ranked 35/176) and Part A (ranked 19/159) exams.

Illinois Mathematics and Science Academy

August 2014 - June 2017

High School Diploma

RESEARCH EXPERIENCES

Cornell University Research Internship *June 2020 - Present.*

Advisor: Dr. Debanjan Chowdhury

Originally an REU canceled due to COVID

The Berry curvature has been extensively used in investigating topological phases in condensed matter. Lesser known is that it can be seen as the antisymmetric part of the larger Quantum Geometric Tensor (QGT), the symmetric part of which yields a Riemannian metric called the Fubini-Study (FS) metric. We investigated the phenomenology of the FS metric in the context of the popular Moire superlattices (superposed lattices with a slight relative twist). We primarily looked into current-noise spectrums and weak nonlinear optical response as possible experimental responses. Python was used heavily.

Northwestern University Research Internship *July 2018 - October 2018*

Advisor: Dr. Jens Koch

Investigated the decoherence and dephasing times of the fluxonium qubit under the influence of $1/f$ charge noise. This was done through numerical simulation of various random ordinary differential equations in Python and Julia.

LEADERSHIP

President of Oxford University Physics Society (OUPS) *April 2019 - April 2020.*

I coordinated and organized three major types of events for the Oxford University Physics Society.

- **Research Talks:** Professors within and outside Oxford are invited to talk about their research within physics to an audience of 70-80 people.
- **Extracurricular Classes:** A lecture-style class is held by a professor on a variety of interesting topics. Topics I personally have organized have included, for example, chaos theory, knot theory, biophysics, econophysics, symplectic geometry, particle/field ontologies in QFT, and thermodynamics of cooking a chicken.
- **Socials:** Undergraduate and graduate students meet in an informal setting to chat, bond, and network with the larger physics community in Oxford.

Representative on Physics Joint Consultative Committee (PJCC) *November 2017 - Present.*

Met with various members of the physics faculty and student representatives to discuss the current state, progress, and future goals for the undergraduate physics curriculum. Topics commonly covered were ways of ensuring student feedback, the incorporation of coding into the curriculum's mainstream, and assessment criteria in lab work.

Co-President of Balliol Undergraduate Physics Society (BURPS) *October 2018 - June 2019.*

The Balliol physics community has an annual dinner and speaker which I organized for 2019. I had invited Professor Alex Schekochihin to discuss turbulence.

OTHER

PCMI/IAS Undergraduate Summer School *June 2018*

Undergraduate summer school organized by the Park City Mathematics Institute (PCMI) and the Institute for Advanced Study (IAS). The program consisted of various groups from undergraduates to professors investigating a central research topic, namely harmonic analysis for 2018.

AWARDS AND DISTINCTIONS

Ken Allen Prize *November 2019.* Awarded for best performance in practical course of Balliol year group.

Theobald Scholar *November 2019.* Awarded by Balliol Tutorial Board for performance in Part A examinations.

Theobald Exhibition *November 2018.* Awarded by Balliol Tutorial Board for performance preliminary examinations