

James Harbour

UVA Math & CS

"Find what you love and let it kill you" — Charles Bukowski

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Education

Class of 2025 at the University of Virginia, Mathematics and Computer Science double major

- Completed the undergraduate requirements for mathematics major during high school.
- Completed the UVA mathematics PhD curriculum as a freshman; passed PhD qualifying exams as a freshman.
- Graduate level courses:** Machine Learning, Topological Modular Forms, Operator Algebras, Random Walks on Groups, Functional Analysis, Harmonic Analysis, Complex Analysis, Measure Theory, Differential Topology, Algebraic Topology I & II, Algebraic Geometry, Algebra I & II, Partial Differential Equations,

Mathematics Experience

- 2024 **Vanderbilt Research**, *Visiting researcher under Dr. Jesse Peterson*, studying von Neumann equivalence and deformation/rigidity theory, supported by the *Harrison Award*
- 2024 **Purdue Research**, *Visiting researcher under Dr. Thomas Sinclair*, studying tracial joint spectral measures, type III von Neumann algebras, and biexact groups, supported by the *Ingrassia Grant*
- 2023 **UChicago REU**, Full participant, Studying s -Perimeter and Nonlocal Potential Theory

Selected Talks

- 11/24 **Sofic Actions and the Generalized Elek-Szabo Property via the Loeb Measure Space**, *UVA Sofic Groups and Stability Seminar*
- 10/23 **α -stable Levy Processes and Fractional Laplacians**, *Random Walks on Groups lecture*
- 07/23 **Asymptotics of the Fractional s -Perimeter**, *University of Chicago REU*
- 04/23 **Maximal rigidity for L^2 -cohomology of Groups and Beyond**, *UVA Operator Algebras seminar*
- 11/22 **Index Rigidity for type-III₁ Subfactors**, *UVA Operator Algebras seminar*

Selected Travel

- 10/24 **Virginia Operator Theory and Complex Analysis Meeting (VOTCAM)**, *Richmond University*, attendee
- 01/24 **Joint Math Meetings**, *San Francisco*, speaker, supported by AMS undergraduate travel grant
- 10/23 **East Coast Operator Algebras Symposium**, *Purdue University*, attendee, supported by NSF grant DMS-2321632
- 10/23 **Virginia Operator Theory and Complex Analysis Meeting (VOTCAM)**, *Richmond University*, attendee
- 05/23 **Noncommutative Geometry and Operator Algebras (NCGOA) Spring Institute**, *Vanderbilt University*, attendee
- 01/23 **Joint Math Meetings**, *Boston*, attendee, supported by NSF grant DMS-2035183
- 10/22 **East Coast Operator Algebras Symposium**, *Michigan State University*, attendee, supported by NSF grant DMS-2035183
- 06/22 **Thematic Program in p -adic L-functions and Eigenvarieties - Undergraduate Workshop**, *University of Notre Dame*, participant, supported by NSF grant DMS-1904501

Financial Experience

Quant Education Chair for UVA's Alternative Investment Fund An investment club managing a portfolio of \$60,000 AUM with both systematic and discretionary trading strategies. Rigorous selection process with multiple interviews and a 3% acceptance rate. In my role as Quant Education Chair, I run a seminar on the mathematics behind quantitative finance.

Programming Experience

Proficient In Java, C, C++, Assembly (x86 and LLVM), Python, \LaTeX , SageMath, Mathematica. I have also taken courses in compilers, cybersecurity, computer architectures, machine learning, and algorithmic economics.