Sachin Kumar

Curriculum Vitae

200 University Avenue West
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University of Waterloo
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Research Interests

Number Theory, Arithmetic and Algebraic Geometry, and Cryptography.

Education

2026 **Bachelors in Mathematics**, *University of Waterloo (GPA - 3.9/4.0)*

2023 **NetMath Certificate in (Pure) Mathematics**, *University of Illinois Urbana-Champaign (GPA - 4.0/4.0)*

2021 **AISSCE (CBSE)**, *Indian School Muscat (96%)*

Projects and Internship

Spring 2024 **Undergraduate Researcher (MURA)**, *University of Waterloo*, Canada
- ○ Undergraduate researcher at the Department of Pure Mathematics in the Faculty of Mathematics.
- ○ My research area was in arithmetic geometry.

Spring 2023 **Undergraduate Researcher (MURA)**, *University of Waterloo*, Canada
- ○ Undergraduate researcher at the Department of Pure Mathematics in the Faculty of Mathematics.
- ○ My research area was in Probabilistic Number Theory, with an algebraic flavour. I worked specifically on extending the result of Erdös and Kac to p-adic number fields.

Spring 2022 **Quantitative Analyst Intern (Asset Management)**, *Bank Muscat*, Oman
- ○ Created risk analysis models using R and python for exotic fixed income and equity securities, like BM's oryx fund and money market fund.

Honours and Awards

- ○ President's scholarship with distinction
- ○ Dean's honour list (with Term distinction)
- ○ Mathematics Undergraduate Research Award (MURA)

Talks/Conferences

- **2024 Canadian Undergraduate Mathematics Conference (University of British Columbia)** - presenting a talk on the topic "Absolute Galois group and its representation"
- **2024 CMS Summer Meeting (University of Saskatchewan)**
- **2024 Connecticut Summer School in Number Theory (University of Connecticut)**
- **2024 Canadian Number Theory Association XVI (Fields Institute)**
- **2024 SCHOLAR II - A Scientific Celebration Highlighting Open Lines of Arithmetic Research (Fields Institute)**
- **2023 Canadian Undergraduate Mathematics Conference (University of Toronto)** - presented a talk on the topic "An Algebraic view on the arithmetic of Elliptic curves".

Relevant Coursework

- Elementary Number Theory
- Calculus I, II and III
- Linear Algebra I, II
- Groups, Rings and Fields
- Galois Theory
- Differential and Smooth Manifolds
- Real and Complex Analysis
- Lebesgue and Measure Theory
- Analytic and Algebraic Number Theory
- Algebraic geometry and Topology
- Representation Theory
- Topology
- Commutative Algebra
- Lie groups and Lie algebras
- Public-key and applied cryptography
- Combinatorial enumeration
- Graph Theory
- Fourier Analysis
- Probability and Stochastic Processes
- Mathematical Statistics
- Local Fields
- Riemann Surfaces

Technical Skills

Programming   Python, LaTeX, Wolfram Language, Lean, Sage, Macaulay2, Magma, Matlab, Maple

Software   VS-Code, Vim, Neovim

Interests/Hobbies

- Watching movies and Anime
- Playing squash and Table tennis
- Gaming