Gautam Chaudhuri

Curriculum Vitae

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My research interests lie in differential geometry, algebraic geometry, and mathematical physics with a focus on Ginsburg-Landau vortices and vector bundles over Riemann surfaces.

Education

PhD Candidate, *University of Leeds* *Feb 2022–present*

Supervisors: Prof. Martin Speight, Dr. Derek Harland.
Candidacy transfer passed: Jan 2023
Expected completion date: Jan 2026

Msci Mathematics, *Imperial College London* *Oct 2017–Jun 2021*

Upper Second Class Honours

Projects

MSci project, *Introduction to Seiberg-Witten theory* *Jul 2020–Jun 2021*

Studied Seiberg-Witten theory and some of its applications. Final year research project supervised by Dr. Steven Sivek, Imperial College London.

Reading project, *Energy estimates of the wave equation in Minkowski space* *Jul–Aug 2019*

Studied how geometric energy estimates bound the decay behaviour of solutions to the wave equation. Short reading project supervised by Dr. Christopher Kauffmann, Imperial College London.

Talks

The Geodesic Approximation and the L^2-geometry of Vortex Moduli Spaces *Mar 2024*

Delivered at the MaPLe seminar, University of Leeds

An Introduction to Vortices *Dec 2022*

Delivered at the Pure PGR seminar, University of Leeds

Characteristic classes and (another) proof of the Hairy Ball theorem *Feb 2021*

Delivered at the Imperial College Undergraduate Colloquium, Imperial College London

Attended Workshops and Conferences

Topological Solitons at Edge Hill, *Edge Hill University, Ormskirk* *Jul 2024*

Symmetries in Riemannian Geometry, *King's College London, London* *Jun 2024*

VBAC Workshop — Recent Applications to the Geometry of Moduli Spaces,
Universität Duisburg-Essen, Essen *Aug 2023*

Sheffield GLEN — Derived Categories, Hodge theory and Singularities,
University of Sheffield, Sheffield *Jun 2023*

Oxford-London Gauge Assembly III, *University College London, London* *Nov 2022*

Gauged Maps, Vortices and Their Moduli, *SwissMAP Research Station, Les Diablerets* *Aug 2022*

Geometric Models of Nuclear Matter, *University of Kent, Canterbury* *Jul 2022*

SIG X, *(virtual attendee) Jagiellonian University, Kraków* *Jun–Jul 2022*

Teaching

University of Leeds

- **Tutoring, Marking**: MATH1400 Modelling with Differential Equations *Spring 2024*
- **Tutoring, Marking**: MATH1060 Introductory Linear Algebra *Spring 2024*
- **Workshops, Marking**: MATH0394 Foundation Pure and Applied Mathematics *Autumn 2023*
- **Marking**: MATH2017 Real Analysis *Spring 2023*
- **Tutoring, Marking**: MATH1025 Number Systems *Autumn 2022*

Awards and Scholarships

EPSRC Studentship, *Geometry and Dynamics of Topological Solitons* *Feb 2022–present*

Fully funded studentship for 4 years.

Activities

- **Organiser**: University of Leeds SoM PGR Conference *Jun 2023*
- **Organiser**: Warwick Imperial Conference (WIMP) *Jan 2020–Mar 2021*
- **Organiser**: Imperial College UG Colloquium *Sep 2018–Mar 2021*
- **Webmaster**: Imperial College Mathematics Competition and MathSoc *Sep 2019–Aug 2020*

Skills

- **Programming languages**: Python (proficient), including experience with sage, sympy, numpy, and matplotlib. Haskell (familiar). Julia (familiar). C (familiar).
- **Development tools**: Git (proficient), mercurial, shell dialects (proficient with bash and zsh), podman, GitLab CICD, pipenv, poetry, unittest, mypy.
- **DTP and Typesetting**: HTML/CSS (proficient), LaTeX (proficient, including LuaTeX and TikZ), MathML.
- **Server administration**: Linux (proficient with Fedora and RHEL based systems, experience with Debian and Arch), webservers (nginx), firewalls (iptables and firewalld), security and access controls (PAM and SELinux).