

# Andres Klene Sanchez

## INFORMATION

---

Email: andres.klene@outlook.com

Website: andresklene.github.io

Citizenship: British/German/Spanish

Research interests: differential geometry, (higher) category theory, mathematical physics.

## EDUCATION

---

### MMath Mathematics, University of Oxford

2020–2024

- Year 4: Distinction (79; placed 20th in the cohort).  
Years 1–3: Upper second class (top of classification).
- Part C Dissertation: *Geometric quantisation and Hamiltonian cobordism*  
Supervised by Prof. Andrew Dancer [✉](#). Topics: Hamiltonian group actions, Chern–Weil theory, quantisation of Kähler manifolds, virtual Hilbert representations of Lie groups, Hamiltonian cobordism.
- Part B Essay: *Pseudo-holomorphic lines in the complex projective plane*  
Supervised by Dr. Guillem Cazassus. Topics: almost-complex geometry, 4-manifold topology, elliptic theory.
- Non-compulsory lecture courses taken for examination, organised by year:
  - (4) Homological Algebra, Category Theory, Algebraic Topology, Differentiable Manifolds, Algebraic Geometry, Lie Groups, Riemannian Geometry, Low-Dimensional Topology and Knot Theory.
  - (3) Commutative Algebra, Geometry of Surfaces, Algebraic Curves, Topology and Groups, Functional Analysis I, Functional Analysis II.
  - (2) Rings and Modules, Integration, Topology, Differential Equations II, Probability, Integral Transforms, Calculus of Variations, Mathematical Modelling in Biology, Multidimensional Analysis and Geometry.

### A-Levels, King's College London Mathematics School

2018–2020

- Grades: A\*A\*AaA\* in Mathematics, Further Mathematics, Physics, AS Computer Science, EPQ.
- Extended Project Qualification (EPQ) Dissertation: *The Three-Body Problem*.
- King's Certificate Dissertation: *Planetary Orbits*. Supervised by Prof. Alice Rogers [✉](#).

### GCSEs, Bacon's College

2013–2018

- Grades:  $9^6 \cdot 8^3 \cdot 6 \cdot 5$ , and an A in Astronomy from the Royal Observatory of Greenwich.

## EXPERIENCE

---

### Tutor, Bacon's College

Sep 2024–(present)

- Teacher at a state school in London.
- Delivering the Core Pure curriculum for Mathematics and Further Mathematics A-Levels.

### EPSRC Vacation Intern, Mathematical Institute

Jun 2023–Aug 2023

- Summer research project at Oxford, supervised by Prof. Jason Lotay [✉](#).
- Funded by the EPSRC. Grant title: *Computing Fukaya categories inductively with Fukaya–Seidel categories*.
- Topics: triangulated  $A_\infty$ -categories, symplectic Lefschetz fibrations, toric geometry, scheme-theoretic blowups, derived categories of coherent sheaves, and homological mirror symmetry for Fano varieties.
- Produced a poster entitled *Mirror symmetry for  $V_7$*  for an EPSRC poster event.

### MPLS Summer Placement, Hertford College

Jul 2022–Sep 2022

- Summer research project at Oxford, supervised by Prof. Ben Hambly [✉](#).

- Funded by Hertford College. Grant title: *Non-symmetric diffusion processes on fractals*
- Topics: fractal analysis, random walks on graphs, combinatorics, energy methods.

## AWARDS

---

- Hertford College Subject Prize (for exceptional exam results in the final year) 2024
- Hertford College Scholarship (for outstanding academic performance) 2022, 2023, 2024



## WRITING

---

- [5] [in progress] *Doodles of a Mouse: Aspects of higher geometry*. Available at [andresklene.github.io/mouse](https://andresklene.github.io/mouse)
- [4] [in progress] *Commutative Algebra*. Official lecture notes for the Oxford course 2025. Available at [andresklene.github.io](https://andresklene.github.io).
- [3] *Geometric quantisation and Hamiltonian cobordism*. Part C Dissertation. Available at [andresklene.github.io/gq](https://andresklene.github.io/gq)
- [2] *Pseudo-holomorphic lines in the complex projective plane*. Part B Essay. Available at [andresklene.github.io/p2](https://andresklene.github.io/p2)
- [1] *Associative Metrics*, The Invariant, 2023 (pp. 30–37). Available at [www.invariants.org.uk/wp-content/uploads/2023/02/InvariantMT22.pdf](http://www.invariants.org.uk/wp-content/uploads/2023/02/InvariantMT22.pdf)

## CONFERENCES/WORKSHOPS ATTENDED

---

- Mathematical Institute, Oxford, UK. *Gauge Theory and Topology*  Jul 2023  
Conference in celebration of Peter Kronheimer’s 60th birthday.
- CIRM, Marseille, France. *Morse and Floer Theories*  Feb 2023  
Workshop for early researchers on Floer homology and Fukaya categories.

## SERVICE?

---

Was part of the founding group of the TeXromancers. Worked on J. F. Adams. *Stable Homotopy and Generalised Homology*. Electronic typesetting. Available at [people.math.rochester.edu/faculty/doug/otherpapers/Adams-SHGH-latex.pdf](http://people.math.rochester.edu/faculty/doug/otherpapers/Adams-SHGH-latex.pdf) and ... (not credited).

## LANGUAGES

---

- Spoken: English (native), Spanish (fluent, non-technical), German (conversational).
- Programming: Python, MATLAB, Mathematica.

## REFERENCES

---

- Prof. Jason Lotay ([lotay@maths.ox.ac.uk](mailto:lotay@maths.ox.ac.uk))  
Position: Professor of Pure Mathematics, University of Oxford.
- Dr. Guillem Gazassus ([cazassus@imada.sdu.dk](mailto:cazassus@imada.sdu.dk))  
Postdoctoral Researcher in Quantum Mathematics, University of Southern Denmark.