

# Curriculum Vitae: Adam Morgan

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## EMPLOYMENT

|  |                              |
|--|------------------------------|
| <b>University of Glasgow</b>                                     | <b>Oct 2021-</b>             |
| EPSRC Research Fellow  |                              |
| <b>Mathematisches Forschungsinstitut Oberwolfach</b>             | <b>Jan 2021- April 2021</b>  |
| Leibniz fellow   |                              |
| <b>MPIM Bonn</b>   | <b>Oct 2019- Oct 2020</b>    |
| Postdoctoral fellow  |                              |
| <b>University of Glasgow</b>                                     | <b>Oct 2018 - Sept 2019</b>  |
| Research Associate   |                              |
| <b>King's College London</b>                                     | <b>Sept 2016 - Sept 2018</b> |
| Research Associate   |                              |
| <b>University of Warwick</b>                                     | <b>Oct 2015 - Aug 2016</b>   |
| Research Assistant   |                              |
| <b>Detica</b>  | <b>June - Sept 2011</b>      |
| Intern (Programming and statistical modelling, primarily in SAS) |                              |

## EDUCATION

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|--|-----------------------------|
| <b>University of Bristol</b>                       |                             |
| <i>PhD in Mathematics</i>                          | <b>Oct 2012 - Sept 2015</b> |
| Supervised by Professor Tim Dokchitser             |                             |
| <b>Clare College, University of Cambridge</b>      |                             |
| <i>MMath (Part III of the Mathematical Tripos)</i> | <b>Oct 2011 - June 2012</b> |
| Passed with Distinction (ranked 5th)               |                             |
| <i>BA in Mathematics</i>                           | <b>Oct 2008 - June 2011</b> |
| First class each year                              |                             |

## GRANTS AND PRIZES

EPSRC postdoctoral fellowship, awarded 2021

Faculty of Science Commendation for excellence in a doctoral thesis awarded by University of Bristol, 2015

EPSRC doctoral training grant, 2012 - 2016

Robert Greene cup for academic excellence awarded by Clare College, June 2012

Horne Prize for Physical Sciences awarded by Clare College, three consecutive years 2009-2011

Salters Horners advanced physics prizewinner 2008 (top mark in A-Level physics)

## ACCEPTED PAPERS

*A note on hyperelliptic curves with ordinary reduction over 2-adic fields*, with Vladimir Dokchitser, J. Number Theory 244 (2023), 264-278

*Arithmetic of hyperelliptic curves over local fields*, with Tim Dokchitser, Vladimir Dokchitser and Céline Maistret, Math. Ann. (2022), doi: 10.1007/s00208-021-02319-y

*A user's guide to the local arithmetic of hyperelliptic curves*, with A. Best, L.A. Betts, M. Bisatt, R. van Bommel, V. Dokchitser, O. Faraggi, S. Kunzweiler, C. Maistret, S. Muselli, S. Nowell, Bull. Lond. Math. Soc. 54 (2022), no. 3, 825–867

*On 2-Selmer groups of twists after quadratic extension*, with Ross Paterson, J. London Math. Soc. 105 (2022), no. 2, 1110-1166.

*Tate module and bad reduction*, with Tim Dokchitser and Vladimir Dokchitser, Proc. Amer. Math. Soc. 149 (2021), 1361-1372.

*Quadratic twists of abelian varieties and disparity in Selmer ranks*, Algebra Number Theory 13 (2019), no. 4, 839–899.

*Semistable types of hyperelliptic curves*, with Tim Dokchitser, Vladimir Dokchitser and Céline Maistret, Algebraic curves and their applications, 73–135, Contemp. Math., 724, Amer. Math. Soc., Providence, RI, 2019.

*Integral module structure of  $\Lambda_{A/K}$  for Jacobians of semistable hyperelliptic curves of genus 2*, with Vladimir Dokchitser, appendix to L. Alexander Betts and Vladimir Dokchitser, *Finite quotients of  $\mathbb{Z}[C_n]$ -lattices and Tamagawa numbers of semistable abelian varieties*, Math. Proc. Cambridge Philos. Soc. 166 (2019), no. 3, 487–521.

## PREPRINTS

*Parity of ranks of Jacobians of curves*, with V. Dokchitser, H. Green and A. Konstantinou, arXiv:2211.06357

*Field change for the Cassels-Tate pairing and applications to class groups*, with Alexander Smith, arXiv:2206.13403 .

*The Cassels–Tate pairing for finite Galois modules*, with Alexander Smith, arxiv:2103.08530 .

*The 4-rank of class groups of  $K(\sqrt{n})$* , with Peter Koymans and Harry Smit, arxiv:2101.03407.

*Isogenies between abelian varieties with good ordinary reduction*, 3 pages, appendix to Vladimir Dokchitser and Céline Maistret, Parity conjecture for abelian surfaces, arxiv:1911.04626.

*2-Selmer parity for hyperelliptic curves over quadratic extensions*, arXiv:1504.01960. (updated April 2022)

## INVITED LECTURE COURSES

Four lecture course *Local arithmetic of curves and Jacobians* for *CMI-HIMR Summer school in Computational Number Theory*, University of Bristol, June, 2019.

Four lecture course *L-functions and the Birch and Swinnerton-Dyer conjecture* for the summer school *Curves, L-functions and Galois representations*, ICTP Trieste, September 2017.

## ORGANISATIONAL ACTIVITIES

Organiser of *Gauge Fields in Arithmetic, Topology and Physics*, ICMS Edinburgh, March 6-10 2023

Organiser of *Young Researchers in Algebraic Number Theory* (Y-RANT) 2022, University of Glasgow, Aug 23-25

Organiser of the Algebra and Number Theory Seminar, University of Glasgow, Oct 2021-

Organiser for the number theory study group *Average ranks of elliptic curves*, University of Warwick, Sept-Dec 2015.

## SELECTED TALKS

*Parity of ranks of abelian varieties*, invited speaker at *Mordell 2022: a centenary of elliptic curves*, University of Cambridge, Aug 2022

*Integral Galois module structure of Mordell–Weil groups*, Queen Mary Number Theory Seminar, Dec 2021

*The 2-parity conjecture for Jacobians of hyperelliptic curves*, Glasgow Algebra and Number Theory Seminar, Oct 2021

*Integral Galois module structure of Mordell–Weil groups*, invited speaker at *Arithmetic Statistics and Local Global Principles*, ESI Vienna Sept 2021

*Integral Galois module structure of Mordell–Weil groups*, invited speaker at *Workshop on arithmetic statistics problems*, June 2021

*Invariants of hyperelliptic curves over local fields*, KTH Number Theory seminar, Stockholm, Feb 2020

*Parity of Selmer ranks in quadratic twist families*, Intercity seminar, Leiden, Feb 2020

*Parity of Selmer ranks in quadratic twist families*, Number theory seminar, MPIM Bonn, Dec 2019

*Parity of Selmer ranks in quadratic twist families*, Warwick Number Theory seminar, University of Warwick, June 2019

*Class groups, Selmer groups and Cassels–Tate pairings*, invited speaker at the conference *Enumerative Arithmetic and the Cohen–Lenstra Heuristics*, MPIM, Bonn, June 2019

*Parity of Selmer ranks in quadratic twist families*, London Number Theory seminar, University College London, January 2019

*Parity of ranks of abelian varieties*, Algebra seminar, University of Glasgow, November 2018

*Parity of ranks of abelian varieties*, contributed talk for the conference *Young Researchers in Algebraic Number Theory*, University of Sheffield, November 2018

*Parity of 2-Selmer ranks of abelian varieties over quadratic extensions*, contributed talk for the conference *Rational and Integral Points via Analytic and Geometric Methods*, CMO Oaxaca, June 2018

*Parity of 2-Selmer ranks of abelian varieties over quadratic extensions*, invited speaker at *Rational points in Bristol*, University of Bristol, February 2018

*Parity of Selmer ranks in quadratic twist families*, contributed talk for the conference *Curves and L-functions*, ICTP Trieste, September 2017

*Parity of Selmer ranks in quadratic twist families*, Number Theory seminar, University of Manchester,

February 2017

*Parity of Selmer ranks in quadratic twist families*, Algebra seminar, University of Pennsylvania, November 2016

*Parity of ranks of abelian varieties*, Quebec–Vermont Number Theory seminar, October 2016

*Parity of Selmer ranks in quadratic twist families*, Number Theory seminar, University of Cambridge, September 2016

*Parity of Selmer ranks in quadratic twist families*, contributed talk for the conference *Arithmetic statistics and the Cohen–Lenstra heuristics*, University of Warwick, June 2016

*2-Selmer parity for Jacobians of hyperelliptic curves over quadratic extensions*, Geometry and Algebra seminar, Utrecht university, December 2015

*2-Selmer parity for Jacobians of hyperelliptic curves over quadratic extensions*, TCC Number Theory day, Imperial College London, April 2015

*Parity of 2-Selmer ranks of hyperelliptic curves over quadratic extensions*, contributed talk, CNTA XIII, Ottawa, June 2014

*On Bhargava and Shankar’s work on the average rank of elliptic curves*, Linfoot seminar, University of Bristol, February 2014

*Parity of 2-Selmer ranks of hyperelliptic curves over quadratic extensions*, University of Warwick Number Theory seminar, January 2014

## TEACHING AND PROJECT SUPERVISION

10 hour SMSTC lecture course *Algebras and Representation Theory*, University of Glasgow, Jan-Mar 2023.

12 hour SMSTC lecture course *Galois cohomology and central simple algebras*, University of Glasgow, Jan-Mar 2019.

Supervisor for two MSci projects *Parametrization of rings of small rank* and *Composition of binary quadratic forms*, King’s College London, June-Sept 2017

*Linear algebra and geometry*, teaching assistant, University of Bristol, 2013-2014

*Analysis*, teaching assistant, University of Bristol, 2013-2014

*Group theory maths cafe*, organiser, University of Bristol, May 2013

*Maths 1A20* (introduction to calculus and analysis), teaching assistant, University of Bristol, 2012-2013.