David Kurniadi Angdinata

Research interests

I currently work in the arithmetic of abelian varieties over global fields, specifically on the special values of their twisted L-functions in the context of the refined Birch and Swinnerton-Dyer conjecture. I am involved in the formalisation of arithmetic geometry in interactive theorem provers, being a pioneer in the development of the theory of elliptic curves in Lean. I am also interested in understanding local-global obstructions to rational points on varieties, via cohomological gadgets such as the Brauer group. Finally, I am passionate in pedagogical aspects of undergraduate mathematics education.

Refer to my website for a full list of projects, talks, conferences, teaching, and notes.

Education record

9/21 - 9/25	PhD Mathematics	London School of Geometry and Number Theory
	Supervised by Vladimir Dokchitser and Kevin	Buzzard
10/20 - 6/21	MASt Pure Mathematics	University of Cambridge
10/16 - 6/20	MEng Pure Mathematics and Computation	nal Logic Imperial College London
1/14 - 12/15	Singapore-Cambridge GCE A-level	Temasek Junior College
1/12 - 12/13	Singapore-Cambridge GCE O-level	$Anderson\ Secondary\ School$

Employment record

- $7/22-9/22 \quad \text{Research assistant at Huawei Technologies R\&D UK Ltd} \\ \text{Summer internship on formalisation of modern mathematics in automated theorem proving}$
- 6/19 9/19 Cryptography engineer at Adjoint UK Ltd Developed and published the Haskell libraries galois-field, elliptic-curve, and pairing

Research papers

- ?/25 Computing motivic L-functions over global function fields Preprint in preparation
- ?/25 Formalising division polynomials, elliptic divisibility sequences, the torsion subgroup, and the Tate module of Weierstrass elliptic curves (joint with Peiran Wu and Junyan Xu)

 Preprint in preparation
- 10/24 Algebraicity of Artin–Hasse–Weil L-series over global function fields Preprint submitted to the *Bulletin of the London Mathematical Society*
- 1/24~ L-values of elliptic curves twisted by cubic characters Preprint submitted to the Canadian Journal of Mathematics
- 7/23 An elementary formal proof of the group law on Weierstrass elliptic curves in any characteristic (joint with Junyan Xu)
 Published in the 14th International Conference on Interactive Theorem Proving

Mathlib contributions

Elliptic The discriminant of a cubic equation, Weierstrass equations and their changes of curves variables, the group law in affine coordinates, the group law in Jacobian coordinates, the group law in projective coordinates, division polynomials and their degrees, the theory of elliptic divisibility sequences

Ring theory maximal ideals and maximal spectra, the ring of S-integers of a Dedekind domain, the Selmer group of a Dedekind domain

Selected talks

	Science valls	
13/2/25	Algebraising foundations of elliptic curves Seminar talk for Formalisation of Mathematics with Interactive Theorem Provers in Cambridge	
17/1/25	Division polynomials of elliptic curves Contributed talk for Lean Together 2025 in Zoom (Online)	
5/9/24	Twisted elliptic L-values over global fields Contributed talk for Algebraic Number Theory in Munich	
31/7/24	Denominators of BSD quotients Contributed talk for Young Researchers in Algebraic Number Theory in Oxford	
26/6/24	Elliptic curves in mathlib Workshop talk for Formalising Algebraic Geometry in Pasadena (Online)	
19/6/24	Twisted L-values of elliptic curves Contributed talk for 75th British Mathematical Colloquium in Manchester	
24/4/24	L-values of elliptic curves twisted by cubic characters Seminar talk for <i>Linfoot Number Theory Seminars</i> in Bristol	
25/8/23	Twisted elliptic L-values Contributed talk for Early Number Theory Researchers Workshop 2023 in Bielefeld	
2/8/23	An elementary formal proof of the group law on Weierstrass elliptic curves in any characteristic Conference talk for 14th International Conference on Interactive Theorem Proving in Białystol	
24/8/22	Formalisation of elliptic curves in Lean Contributed talk for Young Researchers in Algebraic Number Theory in Glasgow	
26/5/22	Elliptic curves and the Mordell–Weil theorem Seminar talk for London Learning Lean in London	
25/4/22	Elliptic curves in Lean Workshop talk for <i>Huawei Technologies R&D UK Ltd</i> in Cambridge	
4/12/20	Rank heuristics for elliptic curves Seminar talk for <i>Part III Seminar Series</i> in Cambridge	
13/9/19	Pairing-based elliptic curve cryptography Presentation for $Adjoint\ UK\ Ltd$ in London	
	Selected conferences	
27/7-2/8/25	Rational Points 2025	Schneg
2-6/9/24	Algebraic Number Theory	Munich
	Young Researchers in Algebraic Number Theory	Oxford
	International Congress on Mathematical Software (co-organiser)	Durhan
	Formalising Algebraic Geometry	Pasadena (Online
	14th International Conference on Interactive Theorem Proving	Białystol
31/1 4/0/23		Diaigsioi
1 /25 _ 3 /25	Selected teaching Laboratory for MATH60040 Formalising Mathematics	ICI
		UCI
1/20 - 2/20	Assistant for London Maths Outreach Assisted in an introductory course on elliptic curves for sixth form students t	
5/24 - 6/24	Supervisions for Year 1 Term 3 research projects UC	
	Projects on how to tell if a number is prime and group theory and Rubik's	
1/24 - 3/24	Laboratory for MATH60040 Formalising Mathematics	ICI
1/24 - 3/24	Problem classes and marking for MATH0034 Number Theory	UCI
1/24 - 3/24	Tutorials for 6CCM351A Representation Theory of Finite Groups	KCI
7/23	Assistant for Year 12 Maths Summer School: Logic and Proof	UCI
,	Assisted in an introductory course on logic and proof for sixth form students	
5/23 - 6/23	Supervisions for Year 1 Term 3 research projects Projects on cryptography, sums of squares, and the axiom of choice	UCI

3/23		my St John's Wood	
1/23 - 3/23	Designed a introductory course on elliptic curves for sixth form students that spanned 4 weeks Tutorials and marking for 5CCM251A Discrete Mathematics KCL		
1/23 - 3/23 10/22 - 12/22	Marking for MATH0022 Galois Theory University of the Mathematics of t		
10/22 - 12/22 $10/22 - 12/22$	· · · · · · · · · · · · · · · · · · ·		
5/22 - 6/22	Tutorials and marking for 5CCM224A Introduction to Number Theory KCI Supervisions for Year 1 Term 3 research projects UCI		
0/22 0/22	Projects on continued fractions, cryptography, and Lean		
10/21 - 12/21	Tutorials and marking for MATH0014 Further Linear Algebra	UCL	
	Awards attained		
2024	MAPS Faculty Education Award 2024 for individual excellence	UCL	
2021 - 2025	Full funding for 4-year PhD research $[EP/S021590/1]$	EPSRC	
2020	Governors' MSci JMC Prize for best overall performance in final year	ICL	
2020	Donald Davies Prize for best final year individual project	ICL	
2020	Faculty of Engineering Dean's List ICL		
2018	Department of Mathematics UROP research studentship	ICL	
2018	Faculty of Engineering Dean's List ICL		
2017	G Research Ltd Prize for academic excellence	ICL	
2017	Faculty of Engineering Dean's List	ICL	
2012 - 2015	Full 4-year school-based scholarship	$MOE\ Singapore$	
	Language skills		
Languages	English, Mandarin/Hokkien, Indonesian/Malay, Japanese		
Programming	Lean, Haskell, Python/SageMath, Magma, Java, C/C++, Prolog, PHP/MySQL		
Tools	LaTeX, XHTML/CSS, Git, Stack, Vim		
	Miscellaneous activities		
2022 - 2023	Private tutor for mathematics and computer science in TutorChase and ElitePrep		
2020 - 2021	Owner and moderator of the Cambridge Part III Mathematics Discord server		
2018 - 2021	•		
2019 - 2020	Problems curator for the Imperial College Mathematics Competition		
2018 - 2020	Organiser for the Imperial College undergraduate mathematics colloquium		
2012 - 2018	Solved 180 Project Euler problems primarily in Java and Haskell		