Brandon William Allen Levin

University of Arizona
Department of Mathematics
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EDUCATION

2013	Ph.D. in Mathematics, Stanford University Dissertation: "G-valued flat deformations and local models of Shimura varieties" Advisor: Brian Conrad
2008	Certificate of Advanced Study in Pure Mathematics, University of Cambridge
2007	B.S. in Mathematics, *summa cum laude*, Duke University

EMPLOYMENT

2017-	Assistant Professor, University of Arizona, Department of Mathematics
2014-2017	L.E. Dickson Instructor, University of Chicago, Department of Mathematics
2013-2014	Invited Member, Institute for Advanced Study, Princeton, NJ, School of Mathematics

AWARDS AND DISTINCTIONS

2021 Sloan Research Fellowship
2007 Churchill Scholarship, Winston Churchill Foundation of the United States
2006 Barry M. Goldwater Scholarship
2003 Angier B. Duke Memorial Scholarship, Duke University

RESEARCH GRANTS

2020 - 2023 National Science Foundation (NSF) FRG Collaborative Grant (PI) $315,214
2018 - 2023 Simons Collaboration Grant in Mathematics (PI) $42,000
2016 - 2018 France and Chicago Collaborating in the Sciences Grant (PI)

OTHER GRANTS

2022 NSA Conference Grant for Arizona Winter School (PI) $25,000
2020 NSA Conference Grant for Arizona Winter School (PI) $25,000
2018 Research in Pairs Award, MFO Oberwolfach, Germany
2018 Research in Pairs Award, Centro De Giorgi, Italy
2017 Research in Pairs Award, CIRM Luminy, France
2016 Research in Paris Program Award, Institut Henri Poincaré, France

PUBLICATIONS

1. "Reductions of some two-dimensional crystalline representations via Kisin modules," joint with J. Bergdall, to appear in ***International Mathematics Research Notices*** (2020).
2. "A Harder-Narasimhan theory for Kisin modules," joint with C. Wang Erickson, ***Algebraic Geometry*** 7 (2020), no. 6, 645-695.
3. "Serre weights and Breuil's lattice conjecture in dimension three," joint with D. Le, B. V. Le Hung and S. Morra, ***Forum of Math, Pi*****,** 8 (2020), e5, 135p.
4. "Weight elimination in Serre-type conjectures," joint with D. Le and B. V. Le Hung, ***Duke Mathematical Journal.*** 168 (2019), no. 13, pp. 2433-2506.
5. "Compatible systems of Galois representations associated to the exceptional group E_6," joint with G. Boxer, F. Calegari, M. Emerton, K. Madapusi Pera, and S. Patrikis, ***Forum of Math, Sigma***, 7 (2019), e4, 29p.
6. "Potentially crystalline deformation rings and Serre weight conjectures: Shapes and shadows," joint with D. Le, B. V. Le Hung and S. Morra, ***Inventiones mathematicae***. 212 (2018), no. 1, pp. 1-107.
7. "Kisin modules with descent data and parahoric local models," joint with A. Caraiani, ***Annales Scientifiques d l'Ecole Normale Superieure*** 51 (2018), no. 1, pp.181-213.
8. "Potentially crystalline deformation rings in the ordinary case," joint with S. Morra, ***Annales de l'Institut Fourier*** 66 (2016), no. 5, pp. 1923-1964.
9. "Local models for Weil-restricted groups," ***Compositio Mathematica*** 152 (2016), no. 12, pp. 2563–2601.
10. "G-valued crystalline representations with minuscule p-adic Hodge type," ***Algebra & Number Theory*** 9 (2015), no. 8, 1741-1792.

PREPRINTS

11. "G-valued crystalline deformation rings in the Fontaine-Laffaille range," joint with J. Booher, preprint, arxiv:2010.02328 (2020).
12. "Local models for Galois deformation rings and applications," joint with D. Le, B. V. Le Hung and S. Morra, preprint, arxiv:2007.05398 (2020).
13. "Reductions of 2-dimensional semi-stable representations with large L-invariant," joint with J. Bergdall and T. Liu, preprint, arxiv:2006.16294 (2020).

CONFERENCES ORGANIZED

2023-2025	Arizona Winter School (PI)
2022	Arizona Winter School on Modular forms beyond GL_2 (Scientific organizer)
2020	Arizona Winter School on Nonabelian Chabauty (Scientific organizer)
2019	BIRS-Oaxaca Workshop on Modularity and Moduli Spaces (Co-Organizer with R. Bellovin, M. Emerton, and D. Savitt)

TEACHING

Graduate Courses

Linear Algebra, University of Arizona, Fall 2021
Algebraic Number Theory II, University of Arizona, Spring 2020
Algebraic Number Theory I, University of Arizona, Fall 2019
Linear Algebra, University of Arizona, Fall 2018

Undergraduate Courses

Special Topics: Introduction to p-adic Hodge theory, University of Arizona, Spring 2021
Linear Algebra, University of Arizona, Fall 2020, Spring 2021
Honors Calculus II, University of Arizona, Spring 2018
Calculus I, University of Arizona, Fall 2017
Honors Calculus I-II (Inquiry Based Learning), University of Chicago, 2016-2017
Honors Calculus I-III (Inquiry Based Learning), University of Chicago, 2015-2016
Real Analysis I, University of Chicago, 2015
Linear Algebra, University of Chicago, 2015
Elementary Number Theory (Inquiry Based Learning), University of Chicago, 2014
Introduction to Cryptography (T.A., Writing in the Major), Stanford University, 2012
Linear Algebra and Multivariable Calculus (T.A.), Stanford University, 2010
Introduction to Group Theory (T.A., Writing in the Major), Stanford University, 2010

SELECT INVITED TALKS

2021 University of Arizona Mathematics Department Colloquium
2020 Centre de Recherches Math., Workshop on Serre weights and geometry of Shimura varieties
2019 Tata Institute, Mumbai, India
John Hopkins University, Number Theory Seminar
Mathematical Institute, Univ. of Oxford, Clay Workshop on Modular Representation Theory
King's College London, Workshop on the p-adic Langlands programme and related topics
University of Maryland, Number Theory Seminar
University of California, Berkeley, Number Theory Seminar
2018 Bellairs Research Institute, Workshop on Unitary Shimura Varieties and Modular Forms
California Institute of Technology, Number Theory Seminar
University of Chicago, Number Theory Seminar
2017 Institute for Advanced Study, Workshop on Motives, Galois Representations and Cohomology around the Langlands Program
University of Virginia, Workshop on Elliptic Curves, Torsors, and L-functions
2016 Columbia University, Automorphic Forms and Arithmetic Seminar
Quebec-Vermont, Number Theory Seminar
Duke University, Number Theory Seminar
University of Chicago, Number Theory Seminar
2015 University of Wisconsin Madison, Number Theory Seminar

University of Illinois Urbana-Champaign, Number Theory seminar
Johns Hopkins-Maryland, Algebra and Number Theory Day
Oberwolfach Workshop on Reductions of Shimura Varieties
AMS Sectional Meeting, Chicago, Special Session on Langlands Program
Joint Mathematics Meetings – AMS Special Session on Recent Developments in Algebraic Number Theory
Tata Institute for Fundamental Research Seminar
University of Toronto, Number Theory Seminar

2014 Harvard University, Number Theory Seminar

2013 Imperial College, Number Theory Seminar
Cambridge University, Number Theory Seminar
Princeton/IAS, Number Theory Seminar
Harvard University, Number Theory Seminar
California Institute of Technology, Number Theory Seminar

2012 University of California, Los Angeles, Number Theory Seminar
University of California, Berkeley, Number Theory Seminar

CAMPUS AND COMMUNITY TALKS

2019 "Fermat's Last Theorem," Univ. of Arizona, Undergraduate Research Seminar
2014 "Modular arithmetic," University of Chicago Young Scholars Program
2011 "Fractional linear transformations," Stanford Math Circle
2009 "What's the deal with -163?," Stanford University Mathematical Organization

CONFERENCES AND WORKSHOPS

2022 Arizona Winter School on Modular forms beyond GL_2 (Scientific organizer)
2020 Centre de Recherches Mathématiques, Workshop on Serre weights and geometry of Shimura varieties (virtual)
2020 Arizona Winter School on Non-Abelian Chabauty Method (Scientific organizer)
2019 BIRS-Oaxaca Workshop on Modularity and Moduli Spaces (Co-Organizer with R. Bellovin, M. Emerton, and D. Savitt)
2019 Mathematical Institute, Univ. of Oxford, Clay Workshop on Modular Representation Theory
2019 King's College London, Workshop on the p-adic Langlands programme and related topics
2019 Oberwolfach Workshop, Germany, on Arithmetic of Shimura Varieties
2018 Bellairs Research Institute, Barbados, Workshop on Unitary Shimura Varieties and Modular Forms
2017 Institute for Advanced Study, Workshop on Motives, Galois Representations and Cohomology around the Langlands Program
2017 University of Virginia Workshop on Elliptic curves, Torsors, and L-functions
2016 Indiana University Workshop on the p-adic Langlands Program and Related Topics

2016	Hausdorff Center for Mathematics, Germany, Recent Developments in Integral p-adic Cohomology Theories
2015	Oberwolfach Workshop, Germany, Reductions of Shimura Varieties,
2015	CIRM, France, Géométrie Arithmétique, Théorie des Representations et Applications
2014	MSRI, Automorphic forms, Shimura Varieties, Galois Representations, and L-functions
2014	MSRI, Perfectoid Spaces and their Applications
2013	Arizona Winter School, University of Arizona, Modular Forms and Modular Curves
2011	CIRM, France, SGA3 Luminy summer school
2011	Fields Institute, Canada, Workshops on Cohomology of Shimura Varieties: arithmetic aspects and the construction of Galois representations
2011	Arizona Winter School, University of Arizona, Stark-Heegner points
2010	UCLA, Modular/Geometric Iwasawa Theory and p-adic L-functions
2010	MSRI, Sage Days 22 on Elliptic Curves
2009	Clay Workshop on Galois representations, University of Hawaii

PROFESSIONAL SERVICE

2020-present	Postdoctoral Committee
2019-present	Faculty Academic Advisor for Undergraduate Math Majors
2019-2020	Organizer of University of Arizona Mathematics Department Colloquium (with C. Henderson)
2017-2020	Reviewer for American Mathematical Society (AMS)
2013-present	Referee for journals including ANT, JNT, IMRN, Trans. of AMS, JIMJ, IJM, and Rep. Theory, Compositio
2015-2016	Organizer, University of Chicago Number Theory Seminar

ADVISING

Postdocs
Kevin Childers
Sungyoon Cho

PhD Students, Advisor
Rachel Knak, University of Arizona, expected 2023
Anthony Guzman, University of Arizona, expected 2024
Ben Savoie, University of Arizona, expected 2024
Gaurish Korpal, University of Arizona, expected 2025

PhD Students, Dissertation Committee
Anthony Kling, University of Arizona, 2021
David Taylor, University of Arizona, 2020
Jun Wang, University of Arizona, 2018
Cody Gunton, University of Arizona, 2018
Sheng-Chi Shih, University of Arizona, 2018

PhD Comprehensive Exam Committee
Utkarsh Agrawal, University of Arizona, 2019
Jonathan Taylor, University of Arizona, 2018

Undergraduate Thesis
Victor Zhang, University of Chicago, 2016

REFERENCES

Matthew Emerton
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Imperial College London
180 Queen's Gate
London SW7 2RH, UK
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1 Oxford Street
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