

Employment

- **University of Arizona**, Tucson, AZ, USA
Postdoctoral Research Associate, August 2019 – present
- **Purdue University**, West Lafayette, IN, USA
Golomb Visiting Assistant Professor, August 2016 – May 2019

Education

- **Harvard University**, Cambridge, MA, USA
Ph.D. in Mathematics, September 2009 – May 2016
(Sept. 2010 – July 2012 : Leave of Absence for mandatory **military service** in South Korea)
Thesis Advisor: Mark Kisin
- **Stanford University**, Stanford, CA, USA
M.S. in Statistics, September 2008 – March 2009.
B.S. in Mathematics and Physics, September 2004 – December 2008.

Research Interests

Number theory and Arithmetic geometry

Research Articles

- *Completed prismatic F -crystals and crystalline \mathbf{Z}_p -local systems.* (with Heng Du, Tong Liu, and Koji Shimizu) preprint.
- *Strongly divisible lattices and crystalline cohomology in the imperfect residue field case.* submitted. arXiv:2110.06001
- *Relative Fontaine-Messing theory over power series rings.* (with Tong Liu and Deepam Patel) submitted. arXiv:2012.04013
- *Relative crystalline representations and p -divisible groups in the small ramification case.* (with Tong Liu) Algebra & Number Theory, vol. 14, 2020.
- *Extending p -divisible groups and Barsotti-Tate deformation ring in the relative case.* International Mathematics Research Notices, vol. 2021, 2021.
- *Potentially semi-stable deformations of specified Hodge-Tate type and Galois type.* Journal of Number Theory, vol. 181, 2017.
- *Galois deformation ring and Barsotti-Tate representations in the relative case.* Harvard University Ph.D Thesis, 2016.

Selected Talks

- February 2022: Joint Berkeley-Caltech-Stanford number theory seminar
- November 2021: Number theory seminar, UCLA
- October 2021: Korean Mathematical Society Fall Meeting
- February 2021: Algebra Number theory seminar, Univ. of Arizona
- October 2020: Korean Mathematical Society Fall Meeting
- November 2019: Algebraic Geometry Seminar, Purdue Univ.
- October 2019: Number Theory Series in Los Angeles
- July 2019: Number Theory Seminar, KIAS, South Korea

- May 2019: Number Theory Seminar, Seoul National Univ., South Korea
- April 2019: Number Theory Seminar, Univ. of Michigan, Ann Arbor
- December 2018: Arithmetic Geometry Seminar, Univ. of Bonn, Germany
- November 2018: Pop-up Conference in Number Theory, Univ. of Illinois at Chicago
- August 2018: Number Theory Seminar, KIAS, South Korea
- April 2018: Spring Lecture Series - Old and New Themes in p -adic Cohomology, Univ. of Arkansas
- January 2018: Number Theory Seminar, KIAS, South Korea
- January 2017: Automorphic Forms and Representation Theory Seminar, Purdue Univ.
- January 2017: Number Theory Seminar, Postech, South Korea
- January 2016: Number Theory Seminar, KIAS, South Korea

Grants

- AMS-Simons Travel Grant, 2020–2022

Honors / Awards

- Samsung Scholarship for Graduate Studies, Fall 2009 – Spring 2016
- Samsung Scholarship for Undergraduate Studies, Fall 2004 – Spring 2008
- The J.E. Wallace Sterling Award for Scholastic Achievement, March 2008, Stanford University
- Research Award, Dept. of Mathematics, Stanford University, June 2008
- Silver Medal in the 34th International Physics Olympiad, August 2003

Teaching

University of Arizona

- Math 415/515: Introduction to Abstract Algebra (Spring 2021, Fall 2020)
- Math 313: Introduction to Linear Algebra (Spring 2022, Fall 2021, Spring 2020)
- Math 196V: Vector Calculus Supplemental Instruction Seminar (Spring 2021, Fall 2020)
- Math 196M/N: Calculus Supplemental Instruction Seminar (Fall 2021)
- Math 122B: Calculus (Fall 2019)

Purdue University

- Math 265: Linear Algebra (Spring 2019, Spring 2018, Fall 2017)
- Math 266: Ordinary Differential Equations (Fall 2018, Spring 2017, Fall 2016)

Harvard University

- Math 21A: Multivariable Calculus (Fall 2015, Fall 2014)

- Services / Outreach**
- Referee services: Refereed articles for Journal of the European Mathematical Society, Communications in Algebra
 - Co-organizer of Algebra Number theory seminar at University of Arizona
 - Tucson Math Circle (2019–present): Mentored grade 6–12 students
 - Integration Workshop (2019): Taught preparatory sessions for incoming Math Ph.D students at University of Arizona
 - Purdue Korean School (2017–2019): Mentored grade 9–12 students at a local church

**Some Conferences
Attended**

- Number Theory Series in Los Angeles
October 2019, Occidental College, USA
- Hausdorff School on the Emerton-Gee stack and related topics
September 2019, HCM, Germany
- Pop-up Conference in Number Theory
November 2018, University of Illinois at Chicago, USA
- Spring Lecture Series - Old and New Themes in p -adic Cohomology
April 2018, University of Arkansas, USA
- p -adic Cohomology and Arithmetic Applications
October 2017, BIRS, Banff, Canada
- p -adic Methods for Galois Representations and Modular Forms
February 2017, BGSMath, Barcelona, Spain
- p -adic Langlands Program and Related Topics
May 2016, Indiana University Bloomington, USA
- p -adic Variation in Number Theory
(in honor of Glenn Stevens' 60th Birthday)
June 2014, Boston University, USA
- Perfectoid Spaces and their Applications
February 2014, MSRI, USA
- Conference on Arithmetic Algebraic Geometry
October 2013, Paderborn University, Germany

Personal

- Citizenship : Republic of Korea (South Korea)
- Address : Department of Mathematics, University of Arizona
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References

- **Professor Mark Kisin** (Ph.D. advisor) kisin@math.harvard.edu
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- **Professor Tong Liu** tongliu@math.purdue.edu
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- **Professor Bryden Cais** (Post-doctorate mentor) cais@math.arizona.edu
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- **Professor Brandon Levin** bwlevin@math.arizona.edu
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