

HANLIN CAI

University of Utah, 155 S 1400 E, Salt Lake City, Utah
cai@math.utah.edu

EDUCATION EXPERIENCE

PhD in Mathematics , University of Utah Advisors: Sean Howe and Karl Schwede	2019–2024
BS in Mathematics , Peking University	2015–2019

RESEARCH INTEREST

Commutative Algebra, Arithmetic Geometry

EMPLOYMENT

Postdoctoral Researcher , Columbia University, New York City, USA	2024–
Graduate Teaching Assistant , University of Utah, Salt Lake City, UT, USA	2019–2024

PAPERS

Perfectoid signature, Perfectoid Hilbert-Kunz multiplicity, and an application to local fundamental groups
Joint with Seungsu Lee, Linqun Ma, Karl Schwede and Kevin Tucker

Characterizing perfectoid covers of abelian varieties
Joint with Rebecca Bellovin and Sean Howe (with an appendix by Tongmu He)

Plus-pure thresholds of some cusp-like singularities in mixed characteristic
Joint with Suchitra Pande, Eamon Quinlan-Gallego, Karl Schwede, Kevin Tucker

IN PREPARATION

Perfectoid Signature for Pairs	Joint with Linqun Ma, Karl Schwede and Kevin Tucker
A p -adic Simpson Correspondence for Non-Smooth Rigid Spaces	Joint with Zeyu Liu
Prismatic Hard Lefschetz	

INVITED TALKS

University of Toronto Number Theory Seminar.	2025
University of Utah NT/RT Seminar.	2025
Columbia University Algebraic Geometry Seminar.	2024
UCSD Number Theory Seminar.	2023
University of Utah Commutative Algebra Seminar.	2023
AMS sectional meeting: Special Session on Recent Advances in Algebraic Geometry and Commutative Algebra in or Near Characteristic p (associated with the Invited Address by Bhargav Bhatt).	2022

CONFERENCES AND WORKSHOPS ATTENDED

Recent Developments in Commutative Algebra (SLMath): Program Associate.	2024
Workshop on p -adic Arithmetic Geometry (IAS).	2023
Algebraic Geometry and Singularities: Learning Workshop and Conference (UWashington).	2022
Advances in Mixed Characteristic Commutative Algebra and Geometric Connections (Banff).	2022

SEMINARS (CO)-ORGANIZED

TEACHING

University of Utah:

3150 PDE for Engineers (Instructor);	2022–2023
1210 Calculus 1 (Instructor); 3160 Applied Complex Analysis (Instructor);	2021–2022
2250 Differential Equations and Linear algebra (TA); 1210 Calculus 1 (Instructor);	2020–2021
1310 Engineering Calculus 1 (TA); 1320 Engineering Calculus 2 (TA);	2019–2020

SERVICES

Tutor in BRIDGES conference (Building Relationships for an Inclusive and Diverse Group of Emerging Students)	2022
--	------