

# Charles Reid

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## Research Interests

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Broadly, I am interested in differential geometry and quantum field theory. More specifically, I study character varieties of surfaces using techniques from analysis, algebraic geometry, dynamics, and quantum field theory.

## Education and Positions

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Gibbs Assistant Professor at Yale (3-year position 2025-2028)

Postdoctoral Researcher at MPI for mathematics in the sciences in Leipzig (2024-2025)

Visiting Graduate Fellow at Harvard University (2023-2024)

PhD in Mathematics at UT Austin (2018-2024, Advised by Daniel Freed and Jeffrey Danciger)

BA in Mathematics at UC Berkeley (2014-2017, thesis advised by Alexander Givental)

## Preprints

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**Boundary Currents of Hitchin Representations**, April 16, 2025 <https://arxiv.org/abs/2504.12294> [math.GT]

**Fock Bundles and Hitchin Components**, October 6, 2023 (with Alexander Thomas and Georgios Kydonakis) [arXiv:2310.04377](https://arxiv.org/abs/2310.04377) [math.DG]

**Limits of Convex Projective Surfaces and Finsler Metrics**, September 19, 2023 [arXiv:2309.10290](https://arxiv.org/abs/2309.10290) [math.DG]

**Symmetries of 2D TQFTs and Equivariant Verlinde Formulas for General Groups**, November 15, 2021 (with Sergei Gukov, Du Pei, and Ali Shehper) [arXiv:2111.08032](https://arxiv.org/abs/2111.08032) [hep-th]

## Some Invited talks

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**Boundary Currents of Hitchin Components**, May 23, 2025, Institut Henri Poincaré Conference on Higher rank geometric structures, Higgs bundles and physics

**Boundaries of Hitchin components and things they parametrize**, July 24, 2024, AMS-UMI International Joint Meeting in Palermo

**Boundaries of Hitchin components**, June 3, 2024, Workshop on Moduli of Meromorphic Quadratic Differentials at the Simons Center in Stony Brook

**Limits of Convex Projective Structures and Finsler Metrics**, February 15, 2024, Boston College Geometry, Topology, and Dynamics Seminar

**Hyperkähler Geometry of the Moduli Space of Higgs Bundles**, August 29, 2023, Metrics on higher Teichmüller spaces workshop in Fréjus

**Limits of Convex Projective Structures and Finsler Metrics**, October 18, 2022, Heidelberg Geometry Seminar

**Universal Higher Teichmüller Spaces**, October 14, 2022, Oberwolfach Arbeitsgemeinshaft on Higher rank Teichmüller Theory

### **Seminar Organization**

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Yale QFT and Quantum Topology Seminar (with Ka Ho, Surya Raghavendran, and Andy Neitzke)

UT Austin Junior Geometry and String Theory Seminar

Mapping class group learning seminar (with Casandra Monroe)

UT Austin Junior Geometry Seminar

### **Teaching and Mentorship**

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Linear Algebra with Applications, Fall 2025

Led calculus discussion sections for 5 semesters

DRP mentor for 5 semesters

Texas Geometry Lab mentor

UT Austin Math Club talk "What can you hear about the shape of a drum?"

### **Languages**

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Native English speaker; intermediate ability in Spanish, Mandarin Chinese and German