Nicolas Brody

Mathematics Ph.D. Student

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Education

2016–2021 **PhD, Mathematics**, *University of California, Berkeley*, Berkeley, CA.

2014–2016 **Master of Arts, Mathematics**, *University of California, Santa Barbara*, Santa Barbara, CA.

2011–2014 **Bachelor of Arts, Mathematics**, *University of California, Santa Barbara*, Santa Barbara, CA.

2007–2011 **High School Diploma**, *Menlo-Atherton High School*, Atherton, CA.

Research

Title *Limit Roots of Lorentzian Coxeter Systems*

Advisor Jon McCammond

Description This is a Master's thesis in geometric group theory. It studies the projective distribution of reflection vectors for Coxeter groups which act on Lorentz space. `http://www.math.ucsb.edu/~nbrody/limitroots.pdf`

Title *Rational Hyperbolic Triangles and a Quartic Model of Elliptic Curves*

Advisor Jordan Schettler

Description There is a well-known way to parameterize a family of Euclidean triangles by an elliptic curve; here, we find an elliptic curve which parameterizes a family of triangles in hyperbolic space, and use this connection to study both elliptic curves and hyperbolic triangles. *To appear in the Journal of Number Theory.* `http://arxiv.org/abs/1406.0467`.

Title *Ramanujan's Continued Fractions and the Icosahedron*

Advisor Jordan Schettler

Description We studied the Rogers-Ramanujan identities together with Klein's solution of the quintic and the icosahedral equation. We prepared a poster and a presentation. `http://math.ucsb.edu/~jcs/Ramanujan/`

Title *Using Neural Networks to Estimate Traces of Electron Temperatures*

Supervisor Scott Aefsky

Description I set up analytics structure for plasma fusion reactor data at Tri-Alpha Energy, a company developing aneutronic nuclear fusion.

Awards and Exams

2016 Preliminary Exam at UC Berkeley

2015 Qualifying Exam in Algebra

2014 Bachelor's degree: High Honors.

2014 Bachelor's degree: Raymond L. Wilder Award for Outstanding Achievement in Mathematics.

2014 Putnam Exam: Top 600 scores.

2013 Faculty Research Assistant Program: Grant recipient.

Experience

Teaching

2015 **Speaker**, UCSB, Discrete Geometry and Combinatorics seminar.
I presented a talk on Dehn functions in the Discrete Geometry and Combinatorics seminar.

2015 **Teaching Assistant**, UCSB, Math 201A: (Graduate) Real Analysis.
I graded homework for a graduate-level course in real analysis.

2015 **Teaching Assistant**, UCSB, Math 6A: Vector Calculus, (2 quarters).
I taught discussion section, graded exams, and provided office hours for a course in vector calculus.

2015 **Teaching Assistant**, UCSB, Math 4A: Linear Algebra and Applications, (2 quarters).
I taught discussion section, graded exams, and provided office hours for a course in linear algebra.

2014-2015 **Teaching Assistant**, UCSB, Math 118AB: Introduction to Real Analysis, (2 quarters).
I graded homework and provided office hours twice a week for an upper-division course in real analysis.

2013-2014 **Teaching Assistant**, UCSB, Math 115AB: Introduction to Number Theory, (2 quarters).
I graded homework and provided office hours twice a week for an upper-division course in number theory.

Tutoring

2014-2016 **Math Lab**, *UCSB*.
I tutor undergraduate math courses, including calculus, vector calculus, linear algebra, differential equations, real analysis, and abstract algebra.

2013-2014 **Math/Physics Drop-in Tutor**, Campus Learning Assistance Services (CLAS).
I tutored undergraduate math and physics courses, including calculus, vector calculus, linear algebra, differential equations, mechanics, and electricity and magnetism.

Volunteer

2012-2013 **Math Teaching Assistant**, *Adams Elementary School*, Santa Barbara, CA.

Internships

2013 **Consultant**, *Tri-Alpha Energy*, Rancho Santa Margarita, CA.

2010 **Consultant**, *Topspin Media*, San Francisco, CA.

Computer skills

Advanced Geogebra, LaTeX, Mathematica, MATLAB, TikZ

Basic Adobe Illustrator, C++, GAP, Python, Sage, JAVA, PARI