

Sunil Chetty

Curriculum Vitae

College of Saint Benedict and Saint John's University (CSB/SJU)
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EDUCATION

- Sept. 2003 to July 2009 **Ph.D. in Mathematics** - Specialization: Number theory
University of California, Irvine (UCI)
Dissertation: "Local Constants of Polarized Abelian Varieties in Dihedral Extensions"
Advisor: Karl Rubin
- Aug. 2000 to May 2003 **B.A. in Mathematics**
University of California, Berkeley

EMPLOYMENT

- College of St Benedict and St John's University: Associate Professor (2017-Present)
- College of St Benedict and St John's University: Assistant Professor (2011-2016)
- MathPath: Faculty (2013 Summer)
- Colorado College: Postdoctoral Riley Scholar / Visiting Assistant Professor (2009-2011)
- Park City Mathematics Institute: Teaching Assistant (2009 Summer)
- UCI: Research Assistant (2007-2009)
- UCI Summer Bridge: Instructor (2008 Summer)
- UCI: Instructor (2007 Summer)
- UCI: Teaching Assistant (2003 - 2007)

TEACHING

- **College of Saint Benedict and Saint John's University**
 - ASCS 111: Math Preparation (2015 Fall, 2016 Fall)
 - COLG 105K: Math Basics (2017 Fall, 2018 Spring, 2018 Fall, 2019 Spring)
 - MATH 111: Pre-stats and math modeling (2019 Fall, 2020 Spring)
 - MATH 114: Math Exploration (2015 Spring, 2017 Fall)
 - MATH 118: Essential Calculus (2013 Fall, 2014 Summer, 2015 Spring, 2016 Fall)
 - MATH 119: Calculus I (2011 Fall, 2018 Spring)
 - MATH 120: Calculus II (2012 Spring, 2012 Fall, 2016 Spring, 2020 Spring)
 - MATH 121: Math for Elementary Education 1 (2013 Spring, 2014 Spring, 2014 Fall, 2015 Spring, 2015 Fall, 2017 Spring, 2017 Fall, 2018 Fall, 2019 Spring, 2019 Fall, 2020 Fall, 2021 Spring)

- MATH 180: Math for Elementary Education 2 (2015 Fall, 2017 Spring, 2018 Spring, 2019 Fall, 2020 Spring, 2020 Fall, 2021 Spring)
- MATH 239: Linear Algebra (2011 Fall, 2016 Fall, 2019 Spring)
- MATH 241: Foundations of Mathematics (2014 Spring, 2 independent study students, 2018 Fall, 2020 Spring)
- MATH 305: Multivariable Calculus (2013 Fall)
- MATH 331: Algebraic Structures (2012 Spring, 2016 Spring)
- MATH 340: Topics in Mathematics: Number Theory (2012 Fall)
- MATH 371: Independent Study in Algebraic Number Theory (2016 Spring - 5 students)
- MATH 371: Independent Study in Mathematical Logic and Philosophy of Mathematics (2016 Spring - 1 student)
- MATH 371: Independent Study in Real Analysis (2018 Spring - 1 student)
- MATH 371: Independent Study in Algorithms in Mathematics (2020 Spring - 2 students)
- MATH 395: Mathematics Capstone
 - Diophantine Equations (2014 Fall)
 - Finite Fields (2015 Spring)
 - Computational Number Theory (2015 Fall)
 - p -adic Numbers (2016 Spring, 2 independent study students)

- **Colorado College**

- Calculus I (2010 Spring, 2011 Spring)
- Calculus II (2009 Fall, 2010 Summer, 2010 Fall)
- Linear Algebra (2011 Summer)
- Intro to Probability and Statistics (2010 Summer)
- Introductory Number Theory (2011 Spring)
- Math Explorations: Logic and Foundations of Mathematics (2010 Spring)
- Math Explorations: Recognizing Patterns in Mathematics (2010 Fall)
- Independent Study: Algebraic Number Theory (2009 Fall, 2010 Spring)
- Integrated Natural Science Institute (Graduate, 2012 Summer)

- **UCI Summer Bridge**

- Instructor: Pre-calculus (2008 Summer)

- **UCI**

- Instructor: Introduction to Higher Mathematics (2007 Summer)
- Teaching Assistant (Graduate level): Intro to Graduate Algebra
- Teaching Assistant (Undergraduate upper division): Abstract Algebra, Number Theory, Intro to Cryptography
- Teaching Assistant (Undergraduate lower division): Calculus, Linear Algebra, Math of Finance, Discrete Math, Intro to Higher Math

- **MathPath**

- Instructor: Number Theory I (2013 Summer)

– Instructor: Number Theory II (2013 Summer)

- **Park City Mathematics Institute**

– PCMI Graduate Summer School Teaching Assistant: Kolyvagin Systems (2009 Summer)

GRANTS AND AWARDS

- 2008 June - UCI Department of Mathematics Connelly Award

for excellence in teaching and research

- 2013 May - CSB/SJU Faculty Development and Research Grant (with Dr. Bret Benesh)

Math and sciences: Sage and clickers workshop

- 2014 Summer - Student research funding

Project: Groups with only cyclic quotients

- 2018 Spring - CSB/SJU Faculty Development and Research Grant (with Dr. Bret Benesh, Dr. Robert Campbell, Dr. Robert Hesse, and Dr. Anne Sinko)

Python for Stats

- 2019 Summer - Student research funding

Project: Generating primitive Pythagorean triples of special form

- 2019-2020 - Mellon Becoming Community Research, Practice, and Implementation mini-grant (with Dr. Jennifer Galovich, Brian Nyholm)

Mathematics Department Tutor Training

AREAS OF INTEREST

- **Primary Research:**

ranks of elliptic curves and abelian varieties

computational number theory, cryptography, coding theory

algebraic number theory and arithmetic geometry

- **Other:**

K-12 math teacher preparation, mathematics education

foundations/philosophy of mathematics, history of mathematics

PUBLICATIONS

- Computing Local Constants for CM Elliptic Curves (with Lung Li)

Rocky Mountain Journal of Mathematics, Volume 44, Number 3, p.853-863, 2014.

- On the Dimension of Algebraic-Geometric Trace Codes (with Phong Le)

Mathematics, Volume 4, Issue 2, 2016.

- Comparing Local Constants of Elliptic Curves in Dihedral Extensions
Funct. Approx. Comment. Math. Volume 54, Number 2, p.241-250, 2016.
- Arithmetic Local Constants for Abelian Varieties with Complex Multiplication
Funct. Approx. Comment. Math. Volume 55, Number 1, p.59-81, 2016.
- On primitive Pythagorean triples of special form (with Andrew Schmelzer)
submitted
- Neopythagorean triples (with Emily Twardy and Thomas Q. Sibley)
submitted
- Groups with only Cyclic Quotients
in preparation, continued research
- p -totient functions
in preparation, continued research
- Families of congruent numbers from Pythagorean triples
in preparation, continued research

SUPERVISED STUDENT RESEARCH

- 2009-2010 - Lung Li (Colorado College, senior thesis)
“Ranks of elliptic curves over number fields”
- 2012-2013 - Chris Roering (CSB/SJU, Honors thesis)
“Coding Theory Based Public Key Cryptography Using McEliece Cryptosystems”
- 2014 Summer - Zachary Schreier (CSB/SJU, Mathematics summer research)
“Groups with only cyclic quotients”
- 2019 Summer - Andrew Schmelzer (CSB/SJU, Mathematics summer research)
“Generating primitive Pythagorean triples of special form”

PRESENTATIONS

- UCI Number Theory Seminar
2007 Spring - “Local Constants of Elliptic Curves” (Advancement to Candidacy)
2008 Winter - “Modern Number Theory” (Graduate Student Colloquium)
2008 Spring - “Local Constants of Elliptic Curves and Applications”
2009 Summer - “Local Constants of Polarized Abelian Varieties in Dihedral Extensions”
- Western Number Theory Conference
2008 Winter - “Local Constants and the Parity Conjecture”

- Lebanon Valley College
 - 2009 Spring - “Ranks of Elliptic Curves”
- Park City Mathematical Institute
 - 2009 Summer - “On Local Constants and the p -Selmer Parity Conjecture”
- Colorado College
 - 2009 Fall - “Exploring Number Theory via Diophantine Equations”
 - 2009 Spring - “Ranks of Elliptic Curves and the Parity Conjecture”
 - 2010 Spring - “Cryptography: Keeping Secrets through Mathematics”
 - 2010 Fall - “Congruent Numbers and Elliptic Curves”
 - 2011 Spring - “CM Elliptic Curves, Applications and Generalizations”
- Bryn Mawr College
 - 2010 Spring - “Number Theory and Diophantine Equations”
- CSB/SJU
 - 2011 Fall - “Congruent Numbers and Elliptic Curves”
 - 2011 Fall - “Elliptic curves, Rank, and Local Constants I”
 - 2012 Spring - “Elliptic curves, Rank, and Local Constants II”
 - 2013 Fall - “Incorporating software into the mathematics curriculum”
 - 2014 Fall - “The Birch and Swinnerton-Dyer Conjecture”
 - 2014 Spring - “Counting creatively: curves and cryptography”
 - 2015 Fall - “Primality testing up to the AKS algorithm”
 - 2017 Spring - “Arithmetic as pure and applied” (Thursday Forum)
 - 2017 Spring - “What does a prime number look like?”
 - 2019 Spring - “Algorithms in number theory”
 - 2020 Spring - “Mathematics of John Tate” (planned, in preparation)
- University of Minnesota Number Theory Seminar
 - 2012 Fall - “Studying Selmer rank via local constants I”
 - 2013 Spring - “Studying Selmer rank via local constants II”
 - 2014 Spring - “Pairings on elliptic curves, and applications”
- MAA Northcentral Section Meeting
 - 2016 Spring - “Groups with only cyclic quotients”
 - 2021 Spring - “On primitive Pythagorean triples of special form”
- Palmetto Number Theory Series
 - 2019 Fall - “Generating primitive Pythagorean triples of special form”
- MAA MathFest Meeting
 - 2016 Summer - “The effects of calculator use: research from psychology and education”

- MathPath
 - 2011 Summer - “Numbers beyond the Naturals”
- University of Colorado, Colorado Springs - Pikes Peak Math Teachers Circle
 - 2010 Spring - “Finding Solutions to Diophantine Equations”
- University of St. Thomas - Twin Cities Math Teachers Circle
 - 2013 Spring - “Modular Arithmetic and Applications”

CONFERENCES AND WORKSHOPS

- 2007 Winter - Arizona Winter School: p -adic Geometry
- 2008 Winter - Western Number Theory Conference
- 2009 Winter - Joint Mathematics Meetings
- 2009 Summer - Park City Mathematics Institute: L -functions
- 2010 Winter - Joint Mathematics Meetings
- 2010 Summer - MSRI: Critical Issues in Mathematics Education
- 2010 Fall - Workshop on Elliptic Curve Cryptography
- 2011 Winter - Joint Mathematics Meetings
- 2011 Spring - Upstate Number Theory Conference
- 2012 Summer - Algorithmic Number Theory Symposium
- 2012 Summer - MathFest
- 2013 Winter - Joint Mathematics Meetings
- 2014 Spring - MSRI: Model theory, arithmetic geometry and number theory
- 2015 Fall - Mathematics of Cryptography
- 2016 Spring - MAA NorthCentral Section meeting
- 2016 Summer - L -functions and Arithmetic
- 2016 Summer - MathFest
- 2018 Summer - Algorithmic Number Theory Symposium
- 2019 Spring - MSRI: Mathematical Modeling in K-16 - Community and Cultural Contexts
- 2019 Summer - MathFest
- 2019 Fall - Palmetto Number Theory Series
- 2020 Fall - Palmetto Number Theory Series (virtual)
- 2021 Spring - MAA NorthCentral Section meeting

SERVICE

- **CSB/SJU Mathematics Department**

- Represented the Mathematics Department for “choose a major” day at CSB (2011 Fall)
- Putnam/MAA mathematics contest problem solving seminar leader (2011-2013)
- Reader for department hiring committee: first-round reader of applicant files (2011-2012)
- Capstone project supervisor (2012 Spring)
- Presenter for Science Day (2012 Fall)
- Senior Thesis reader (2013 Spring)
- Co-leader for the Mathematics Department’s preparation of materials for the Education Department’s Minnesota Board of Teaching Program Review - Secondary Mathematics (2013 Spring)
- Mathematics Department liaison for student teachers (2012-2018)
- Mathematics Department liaison for the Education Department (2012-2018)
- Mathematics Department liaison for the Honors program (2015-2016)
- Co-organizer of the Central Minnesota Mathematics Teachers’ Circle (2015-Present)
- Lead organizer of the Pi Mu Epsilon Conference (2018-Present)

- **CSB/SJU**

- Joint Faculty Senate (2012-2014)
- Common Curriculum group discussion with Ken Jones (2012 Spring)
- Regent Trustee Scholarship interviewer (2012-2019 Spring semesters)
- Intercultural LEAD Program interviewer (2013-2019 Spring semesters)
- New faculty mentor (2014-2018)
- Common Curriculum Visioning Committee (2015-2017)
- Honors Program Advisory Board (2014-2016)
- FYX Implementation Team (2017-2018)
- Common Curriculum Committee (2014-2018)
- Common Curriculum Committee/General Education Curriculum Committee Co-Chair (2017-2020)
- Implementation of the Integrations Curriculum Committee, LAS subcommittee (2018-2020)
- Search Advocate (2017-Present)

- **Colorado College Mathematics Department**

- Putnam problem-solving seminar leader (2009 Fall, 2010 Fall)
- Represented Mathematics Department in Youth Leadership Day, gave a talk (2010 Spring)
- Senior thesis reader (2011 Spring)
- Represented Mathematics and Computer Science Department in admissions events (2009-2011)

- **UCI Mathematics Department**

- Teaching assistant training panelist (2007, 2008)