

## Spring 2017 Projects

Francisco J. Estrella	Commutative Frobenius Algebras and Topological Quantum Field Theories	Topology, Linear Algebra
Nathan Alvarez Olson	Examples of Sheaves and an Elementary Definition	Algebra, Geometry
Jay Hathaway	Reps of $S_n$ , Nilpotent Orbits, and the Steinberg Variety	Representation Theory, Algebraic Geometry
Jeffrey Jiang	Universal Memes for Categorical Teens	Algebra
Wyatt Reeves	No Quantization without Representation: Representations of $SU(2)$	Algebra, Mathematical Physics
Carl Marth	The Dream of the Tensor Product	Algebra
John Carse	Braid Groups as the Fundamental Group of a Configuration Space	Topology, Combinatorics / Graph Theory
Jeffrey Lee	Rational Points on Elliptic Curves	Algebra, Number Theory
Kartik Chitturi	Persistent Homology	Algebra, Topology
Juan Moreno	Topological K-Theory	Algebra, Topology, Geometry
Cameron Darwin	The Horseshoe Lemma	Algebra, Topology
Zachary Gardner	Ramification in Algebraic Number Theory	Algebra, Number Theory
Minh Le	Friendship	Combinatorics / Graph Theory
Anna Williams	On Knots	Topology
Tamunonye Cheetham-West	Topological groups and identification spaces	Algebra, Topology
Paul Tee	Quasi-Isometries and Cayley Graphs	Algebra
Jack Carlisle	Braid Groups and Knots	Algebra, Topology, Geometry
Juan Acosta	From 3 to infinity. Euclidean and Non-Euclidean Tessellations.	Topology

Juan Sebastian Lozano	Two Proofs of Rademacher's Theorem	Analysis
Sean O'Neil	Reaction-Diffusion Equations	Partial Differential Equations
Anca Andrei	Alternative Conjugate Gradient Methods for Non-symmetric Systems	Numerical Analysis
John Holloway	Changing Spacetime Coordinates	Mathematical Physics
David Green	Inverse Riemann map approximation with hyperbolic circle packing	Topology, Dynamical Systems, Numerical Analysis
Hunter Stufflebeam	Poking fun at surfaces, and how to perturb your manifolds.	Analysis, Geometry
Austin McDow	Bertrand's Theorem	Number Theory
Priya Malhotra	Upper Bounds on the Sum of Principal Divisors of an Integer	Number Theory
Emrys Peets	It's a secret to everybody! Except Bob: A Public-Key Cryptosystem Walkthrough	Number Theory
Carter Smith	An Algebraic Sum of Divisors Function and its Applications	Number Theory
Cameron Walsh	Deriving the Prime Number Theorem	Number Theory
Saber Axmed	Primes of form $x^2 + ny^2$	Number Theory
Katharine Wei	Markov Chains	Probability
Ethan Arnold	Large Deviations and Coin Tossing	Probability
Andrew Hood	Extinction Criterion for the Galton-Watson Process: Theory and Simulation	Probability
Natania Wong	Tropical Economics; Or, How To Sell Bad Apples	Financial Math, Combinatorics / Graph Theory
Jie He	Gradient Descent in multiple classification	Probability, Statistics
John Ludwig	Neural Networks: A Cinematic Application	Statistics, Computing/Neural Networks