

David Meretzky

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Notre Dame, Indiana USA 46556

Research interests Model Theory, Differential Algebra, Geometric Group Theory, Galois Theory

Education **University of Notre Dame** South Bend, Indiana
PhD candidate in Mathematics Sept. 2019 – Present
Advisor: Professor Anand Pillay

Macaulay Honors College at Hunter College, CUNY New York City
Combined BA/MA in Mathematics Sept. 2013 – June 2018
Mentors: Professors John Loustau and Richard Churchill *GPA: 3.8*

Mathematical preprints **More on Galois cohomology, definability and differential algebraic groups** Omar Leon Sanchez, David Meretzky, Anand Pillay. May 2021
arXiv:2105.13053

Teaching experience **Adjunct Lecturer (Hunter College CUNY)**
Courses taught: September 2017 - June 2019
Math 385: Numerical Methods I
MATH 155: Calculus with Analytic Geometry II
MATH 260: Linear Algebra
MATH 255: Vector Calculus
MATH 313: Theory of Numbers
Wrote and gave all lectures, exams, homeworks

Teaching Assistant (University of Notre Dame)
Courses TAed: Fall 2020 - Spring 2022
MATH 10560: Calculus II
MATH 22580: Linear Algebra and Differential Equations
Ran tutorial sessions and wrote worksheet and quizzes.

Talks **Basics of definable Galois cohomology** University of Notre Dame Logic Seminar October 2022
New constants in differential Galois theory University of Illinois Chicago Logic Seminar April 2022
A criterion for strong minimality from the geometric axioms for DCF_0 Notre Dame Mathematics Graduate Student Seminar November 2020
Cell motility: mechanics and analysis Hunter College Department of Mathematics May 2017

Honors and scholarships Landers/Hughes Prize (Hunter College CUNY) 2018
Finalist CUNY Math Challenge (CUNY) 2016/2017
Full Merit Scholarship for Undergrad. Study (Macaulay Honors College) 2013

Scientific research experience **Systems Biology Center NY (Mount Sinai School of Medicine)**
Mentors: Dr. Ravi Iyengar, Dr. Jens Hansen August 2015 – December 2018
Applied graph theory to generate gene ontologies from mRNA microarray data
Programmed in R and Perl to clean and analyzed heart surgery patient data

Department of Mathematics (Hunter College CUNY)
Mentor: Professor John Loustau January 2016 – May 2018
Built an image processing pipeline for microscopy data of cells in Mathematica
Collaborated with biologists to build a mathematical model of cell motility

Scientific publications **Institution-specific machine learning models improve mortality risk prediction for cardiac surgery patients** Submitted for publication

Novel Microscopy and Geometric Techniques for Visualizing Blebbing in Chemotacting Dictyostelium Cells
PLOS ONE, <https://doi.org/10.1371/journal.pone.0211975>. February 2019

A Flexible Ontology for Inference of Emergent Whole Cell Function from Relationships Between Subcellular Processes
Nature Scientific Reports, 7. 17689 (2017). December 2017

Skills **Programming**
Proficient in: R, Mathematica.
Familiar with: C++, Python, Perl

Languages
Spanish: Conversational

Other interests Art, Food, Baking, Basketball, Literature