FRANCESCO PRETA

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EDUCATION

NEW YORK UNIVERSITY New York, NY
Courant Institute of Mathematical Sciences
PhD in Mathematics (Expected – May 2021)

UNIVERSITA DEGLI STUDI DI ROMA TOR VERGATA Rome, Italy
MS in Pure and Applied Mathematics, *110/110 cum laude* (September 2013 – May 2016)

UNIVERSITA COMMERCIALE LUIGI BOCCONI Milan, Italy
BS in Economics and Social Science, *110/110 cum laude* (September 2010 – October 2013)

RESEARCH AREAS OF FOCUS

Hyperbolic Geometry and Topology

- Analyzed the geometry and topology of fibrations of compact hyperbolic mapping tori
- Applied knowledge of Kleinian groups to understand limiting behaviors in Teichmüller spaces
- Studied locations and general properties of short geodesics in Moduli spaces

Machine Learning and Data Embeddings

- Applied research knowledge in differential geometry to analyze hyperbolic embeddings for graphs and trees
- Analyzed the application of hyperbolic embeddings to hierarchical Natural Language datasets

TEACHING

Course Instructor

- Summer 2020: Computational Linear Algebra (Undergraduate), Columbia University
- Summer 2019: Calculus III (Undergraduate), New York University

Teaching Assistant

- Spring 2020: Algebra I (Undergraduate), New York University
- Fall 2019: Derivative Securities (Graduate), PhD Workshop on Advanced Calculus, New York University
- Spring 2019: Applied Statistics (Undergraduate)
- Fall 2018: Derivative Securities (Graduate), PhD Workshop on Advanced Calculus, New York University
- Spring 2018: PhD Workshop on Advanced Calculus, Linear Algebra, New York University
- Fall 2017: PhD Workshop on Advanced Calculus

Grader

- Spring 2019: Complex Variables II (Graduate), New York University
- Spring 2018: Real Variables (Graduate), New York University
- Fall 2017: Introduction to Mathematical Modeling (Undergraduate), New York University

PUBLICATIONS AND PAPERS

- *A Sharper Bound on Location of Short Geodesics in Moduli Spaces*, F. Preta, (In progress)
- *Topology and Geometry of Fibers in Compact Hyperbolic 3-Manifolds*, F. Preta, (In progress)
- *Embedding Graphs in Hyperbolic Surfaces with Minimal Distortion,* F. Preta, S. Douba (In Progress)
- *Split property for free massless finite helicity fields*, R. Longo, V. Morinelli, F. Preta, K. Rehren (Published on *Annales Henry Poincaré,* August 2019)
- *Transfer of Reinforcement Learning in a Natural Language Action Space,* F. Preta, V. Padmakumar (Preprint 2019)
- *Weak uniformization of Zariski-open subsets of algebraic surfaces,* F. Buonerba, F. Preta (Preprint, 2018)
- *Massless Representations of the Poincaré Group*, graduate thesis, Tor Vergata University 2016. Advisor: Roberto Longo.
- *Models of Psychological Game Theory*, undergraduate thesis, Bocconi University 2013. Advisor: Massimo Marinacci.

CONFERENCES

- *Graduate school on Geometry of Teichmüller spaces*. Simons center for Geometry and Physics, April 15-19, 2019
- *Groups explored through geometry and dynamics: A Conference in Celebration of Lee Mosher.* Princeton University, September 8-10, 2017
- *Operator Algebras and Quantum Field Theory, dedicated to the memory of John E. Roberts*. INFN, June 27-29, 2016

TALKS

- *Fibers of hyperbolic mapping tori lying on short geodesics of moduli spaces*. CUNY Graduate Center, March 2019
- *On Bers' embedding of deformation spaces*. CUNY Graduate Center, November 2017

SKILLS AND AFFILIATIONS

- ***Programming languages and skills:*** Python (Numpy, Pytorch), algorithms
- ***Languages:*** Italian (native), French (intermediate)
- Member of ***Spirals***, a NYU initiative to bring together scholars of different disciplines and favor inter-departmental exchange of ideas
- Member of NYU ***Queer Grad***, an inclusive network for graduate students identifying as LGBTQ
- Member of ***Crux***, Queer Climbing group in New York City