Caterina Mazzetti

Curriculum Vitae

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Education

Nov. 2019- March 2023	**Ph.D. in Mathematics**, *Sorbonne Université and University of Bologna*, Cotutelle program. Centre d'analyse et de mathématique sociales (Paris), Dep. Mathematics (Bologna). Thesis title: Neurogeometry of reaching. Advisors: Professors G. Citti and A. Sarti. Committe members: Professors O. Faugeras, P. Chossat, T. Flash, B. Perthame, R. Fioresi, D. Barbieri. Final Assessment: Excellent with honours. https://theses.hal.science/tel-04137244
Sept. 2015- Dec. 2017	**Master's degree in Mathematics**, *University of Bologna*. Specialized in mathematical analysis. 110/110 with honours. Advisor Prof. G. Citti and Co-advisor Doct. E. Baspinar.
Sept. 2012- Oct. 2015	**Bachelor's degree in Mathematics**, *University of Bologna*. Thesis in mathematical analysis. Final score 107/110. Advisor: Prof. A. Montanari.

Experience

Nov. 2024– Present	**Mathematics and Physics professor**, *Liceo Blaise Pascal*, Reggio Emilia. (PNRR-funded national exam.)
Feb. 2020- Present	**Teaching assistant**, *University of Bologna*, Mathematical Analysis 1 and 2. Faculty of Mechanical Engineering (A.Y. 2022-23/24-25), Faculty of Automation Engineering (A.Y. 2021-22/22-23), Faculty of Mathematics (A.Y. 2020-21), Faculty of Electronic and Civil Engineering (A.Y. 2019-20). Professors in chair: F. Uguzzoni, G. Cupini, G. Dore and G. Cupini, V. Martino and M. Franca.
Sept. 2024– Nov. 2024	**Mathematics and Physics professor**, *Liceo Giordano Bruno*, Medicina (Bologna). Teaching in applied science courses.
Oct. 2023– June 2024	**Mathematics and Physics professor**, *Liceo Scientifico Statale E. Fermi*, Bologna. Teaching in applied science courses.
Sep. 2023– Oct. 2023	**Mathematics professor**, *J.M. Keynes*, Castel Maggiore, Bologna. Teaching in the linguistic and technical high school tracks.
May 2018- Oct. 2019	**Business Intelligence Consultant**, KPMG ADVISORY, Bologna. Maintenance and new developments on Sap Business Warehouse for human resources and financial areas.
Jan. 2018- Apr. 2018	**Private Tutor**, MATEMAGIA EDUCATIONAL SERVICES, Bologna. Mathematics and physics lessons to high school students. Tutoring for university admission tests.
Sept. 2016- Jan. 2017	**Teaching assistant**, *University of Bologna*, Mathematical Sciences. Faculty of Management and Marketing, Professor in chair: A. Parmeggiani.

July 2011 **High School Internship**, *Liceo Scientifico Statale E. Fermi*, Bologna.
Researching the school's archives to compile a history storyline for its foundation anniversary celebration.

Talks and Poster Presentations

2023 A sub-Riemannian model of the functional architecture of M1 for arm movement direction, GSI'23 6th International Conference on *Geometric Science of Information*, Saint-Malo, on August 30 - September 01.

2023 A Sub-Riemannian model of M1 cells encoding movement fragments, Poster session, *Sub-Riemannian Geometry, Harmonic Analysis, PDEs and Applications*, Bologna, July 03-05.

2022 A mathematical model of the motor cortex, Poster session, *European Researchers' Night*, Bologna, September 30.

2020 Some applications of the fractional laplacian operator - extension problems, *Department of Mathematics*, Bologna, September 11.

Publications and preprints

2023 Mazzetti, Sarti, Citti, *A Sub-Riemannian Model of the Functional Architecture of M1 for Arm Movement Direction*. In: Nielsen, F., Barbaresco, F. (eds) Geometric Science of Information. GSI 2023. Lecture Notes in Computer Science, vol 14072. Springer, Cham. https://doi.org/10.1007/978-3-031-38299-4_50

2023 Mazzetti, Sarti, Citti, *A model of reaching via subriemannian geodesics in Engel-type group*, https://arxiv.org/pdf/2301.05765.pdf.

2022 Mazzetti, Sarti, Citti, *Functional architecture of M1 cells encoding movement direction*. Journal of Computational Neuroscience 51, 299–327 (2022). https://doi.org/10.1007/s10827-023-00850-2.

Competitions

2024 Winner of the ordinary competition for secondary school, class of competition A027 (Mathematics and Physics), Emilia Romagna.

Awards

2017 Two Emil Banca Scolarships for best achievements in A.Y. 2016-17 and S.Y. 2007- 08.

2013 University of Bologna Scolarship for best achievements in A.Y. 2012-2013

Computer skills

Basic PYTHON, MATHEMATICA

Intermediate MATLAB, LaTeX, MICROSOFT OFFICE, SQL

Advanced SAP Business Warehouse

Languages

Italian Mothertongue

English Good command/good working knowledge

French Good command/good working knowledge

Miscellaneous

2005 - Present Volleyball and beach volleyball player (Fipav/Aibvc).