

Domenico Mergoni

Curriculum

Education

- 2020 - now **PhD in Discrete Mathematics**, London School of Economics, UK.
Expected end: Autumn 2024
- 2018 - 2020 **MSc in Pure Mathematics**, ETH Zürich, Switzerland.
GPA: 5.77/6 'cum laude'
- 2015 - 2018 **BSc in Pure Mathematics**, University of Pisa, Italy.
GPA: 110/110

Working Experiences

- **Teaching (at London School of Economics):**
 - **Statistics and Machine Learning (2022-23):**
 - MA310: Machine Learning,
 - MA455: Reinforcement Learning (MSc course).
 - **Finance (2023):**
 - FM250: Finance,
 - ME200: Comp. Methods in Financial Mathematics.
 - **Management (2022-23) - Lecturer:**
 - Pre-sessional course for LSE Global Master's in Management,
 - Pre-sessional course for LSE MSc Management programme.
 - **Mathematics (2020-22):**
 - MA423: Fundamentals of Operations Research,
 - MA210: Discrete Mathematics,
 - MA103: Introduction to Abstract Mathematics,
 - ME306: Real Analysis.
- **Other:**
 - **Managerial positions:**
 - 2021-now **Senior Subwarden** for LSE residence. *Lead of a 10-people team to oversee 600 students' mental wellbeing.*
 - 2023 **Main organiser** for PCC2024. *Lead of a 4-people team to organise the main Postgraduate UK conference in Combinatorics.*
 - **Internships:**
 - 2020 **PigeonLine**. *Work on applications of graph theory to statistical analysis of correlations.*
 - 2019 **Operations Team**, ETH Entrepreneur Club.

Coding

- Python Advanced, (*Codeforces; GTA of MSc RL course*)
- C, C++ Intermediate,
- R Intermediate, (*GTA of Machine Learning with R*)
- L^AT_EX Advanced.

Awards and Grants

- 2022 **LMS Computer Science Small Grant**, London Mathem. Society.
2021 **LSE Contribution Award**, Dept. of Maths, LSE.

Papers

Work in progress

- 2023++ **Convergence of Policy Gradient Methods to Nash Equilibria in Repeated Games**, with G. Ashkenazi-Golan, E. Plumb.
2023++ **Partition universality for hypergraphs of bounded degeneracy and degree**, with P. Allen, J. Böttcher.
2023++ **Product free sets in $[n]$** , with L. Mattos, O. Parczyk.

On Arxiv

- 2023 **Graphs with large minimum degree and no small odd cycles are 3-colourable**, with J. Böttcher, N. Frankl, O. Parczyk, J. Skokan., <https://arxiv.org/abs/2302.01875>.
2022 **The Ramsey numbers of squares of paths and cycles**, with P. Allen, B. Roberts, J. Skokan, <https://arxiv.org/abs/2212.14860>.
2022 **Density of small diameter subgraphs in K_r -free graphs**, with E. K. Hng, <https://arxiv.org/abs/2207.14297>.

Relevant Talks and Conferences

Organiser

- 2024 **PCC**, Main Organiser, University of London (LSE, UCL, KCL),
2022/23 **PhD CGO Seminar**, *PhD Organiser*, LSE.

Speaker

- 10/2023 **Seminar**, *Product-free sets of $[n]$* , @LSE
09/2023 **Invited Speaker**, *Ramsey number of P_n^2* , @DMV Ilmenau
08/2023 **Contributed Talk**, *Hypergraph partition universality*, @EuroComb Prague
04/2023 **Invited Speaker**, *Ramsey number of P_n^2* , @Charles Uni. Spring School
03/2023 **Contributed talk**, *Chromatic profile of $\{C_3, \dots, C_{2k-1}\}$* , @PCC 2023
07/2022 **Contributed talk**, *Chromatic profile of $\{C_3, \dots, C_{2k-1}\}$* , @RSA Poznan
07/2022 **Contributed talk**, *Ramsey number of P_n^2* , @ICGT Montpellier
06/2022 **Invited seminar**, *Ramsey number of P_n^2* , @TU Hamburg
11/2020 **PhD Seminar**, *About the Pentagon Conjecture*, @LSE
06/2019 **Workshop**, *Permutation patterns*, Participant, UZH
05/2019 **Seminar**, *Algebraic Combinatorics and Sperner Property*, UZH

Languages (ordered by proficiency)

- Italian Native
English C2 level, IELTS test score: 8.0 on July 2018
Spanish B1 level