Mara Belotti

Math Expert | Programmer

website | GitHub | ArXiv

Email: marabelotti96@gmail.com

About me

The focus of my PhD is algebraic geometry but I am familiar with discrete optimization, probability and stochastic analysis. I am experienced in finding innovative solutions to complex problems and I am excited about challenging jobs. During the last three years I worked with computer algebra systems to answer complicated research questions and I am therefore familiar with programming languages like C++ and Python. Because of my education, I am able to explain very complicated concepts to non-experts and I thrive when I'm able to effectively collaborate with others.

Personal informations

Date of birth	25-07-1996
Nationality	Italian
Place of birth	Bergamo

Work experience

Phd in Mathematics October 2020 – (Expected) October 2023
Technische Universität Berlin *Berlin, Germany*

Phd student of the Berlin Mathematical School (BMS)
Thesis title: "Tangency and point constraints in computational geometry" .
Supervisor: Michael Joswig.

- Writing of academic papers
- Presentation of research topics to a broad audience
- Use of computer algebra systems to answer research questions

Education

University of Trieste October 2018 – July 2020
Master of Science in Mathematics *Trieste, Italy*

Attending the joint curriculum coordinated by University of Trieste and SISSA.
Thesis title: "Topology of rigid isotopy classes of geometric graphs"
Supervisor: Antonio Lerario
Grade: 110 cum Laude

University of Milano Bicocca October 2015 – July 2018
Bachelor of Science in Mathematics *Milan, Italy*

Thesis title: "The regular case of Fermat's last theorem: catching a fly on the moon"
Supervisor: Pablo Spiga
Grade: 110 cum Laude

Scholarships

Phase II Scholarships — Berlin, Germany
assigned by BMS through an international competitive selection. — *October 2018- July 2020*

Fellowship for "Percorso Formativo Comune" — Trieste, Italy
assigned by SISSA through a competitive selection for Italian and EU-students. — *October 2018- July 2020*

List of academic papers

Discrete geometry of Cox rings of blow ups of $\mathbb{P}^3$ — Source Code
with Marta Panizzut, submitted to *Journal of the London Mathematical Society* (2023)
ArxivID: 2208.05258

The enumerative geometry of cubic hypersurfaces: point and line conditions — Source Code
with A. Danelon, C. Fevola, A. Kretschmer, published in *Collectanea Mathematica* (2023)
DOI :10.1007/s13348-023-00401-z

Algebraic Degrees of 3-Dimensional Polytopes
with M. Joswig and M. Panizzut, published in *Vietnam Journal of Mathematics* (2022)
DOI :10.1007/s10013-022-00559-2

Graph invariants from the topology of rigid isotopy classes
with A. Lerario and A. Newman, To appear in *Algebraic and Geometric Topology* (2023)
ArxivID: 2008.03984

Real lines on random cubic surfaces
with R. Ait El Manssour and C. Meroni, published in *Arnold Mathematical Journal* (2021)
DOI : 10.1007/s40598-021-00182-y

Talks and presentations

OSCAR II: case studies — Blaubeuren, Germany
In person talk at the annual meeting of the SFB/TRR 195 — *September 2022*

Cox ring of the blow up of 7 points in $\mathbb{P}^3$ — Berlin, Germany
In person talk at DMV (German Mathematical Society) in Berlin — *September 2022*

Cox rings and Mukai edge graphs — Cambridge, UK
In person poster presentation at COMB in CAMB — *September 2022*

Algebraic degrees of 3-polytopes tangent to the sphere — Seattle, USA
In person poster presentation at CCAAGS22 — *July 2022*

The enumerative geometry of cubic hypersurfaces: point and line conditions — Krakow, Poland
In person poster presentation at MEGA (Effective methods in Algebraic Geometry) — *June 2022*

The enumerative geometry of cubic hypersurfaces: point and line conditions — Bad Dürkheim, Germany
In person talk at the conference Women in Algebra and Symbolic Computations II — *November 2021*

Algebraic Degrees of 3-Dimensional Polytopes — Leipzig, Germany
Online talk for "NonLinear Algebra Seminar" at MPI Leipzig — *July 2021*

Algebraic Degrees of 3-Dimensional Polytopes — Berlin, Germany
Online talk to the Freie Universität Discrete geometry Seminar — *July 2021*

Topology of rigid isotopy classes of geometric graphs — Berlin, Germany
Online talk for the Technische Universität Discrete Mathematic and Geometry group — *July 2020*

Real lines on random cubic surfaces — Trieste, Italy
In person talk for the Geometry group at SISSA — *October 2019*

Lines on a cubic hypersurface in $\mathbb{RP}^3$ — Leipzig, Germany
Poster presented at the "Summer School on Randomness and Learning in Non-Linear Algebra" — *July 2019*

Technical Skills

Languages	Julia, C++, Python
Computer algebra systems	Polymake, Oscar.jl, Macaulay2, Sage
Machine learning libraries	Pytorch, Flux
Dev Tools	Git

Software development

software dev contribution	Polymake

Languages

Italian	Native
English	C1