Mara Belotti

Math Expert | Programmer

website | GitHub | ArXiv

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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
Online talk for the Technische Universität Discrete Mathematic and Geometry group

Berlin, Germany
July 2020

Real lines on random cubic surfaces
In person talk for the Geometry group at SISSA

Trieste, Italy
October 2019

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

Leipzig, Germany
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