

# Thomas Blomme

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## Curriculum Vitae

### Personal Information

Date of birth May 3rd 1994  
Address Université de Genève - 1205 Genève - Suisse  
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mathematical  
interests

- tropical geometry
- real and complex geometry
- symplectic geometry and lagrangian submanifolds
- enumerative geometry and refined invariants

### Education

- 2010–2011 **Scientific Baccalauréat (DEC)**, *Lycée Saint-Jude*, Armentières, *with mention*.
- 2011–2013 **Classes préparatoires (Mathematics)**, *Lycée Louis le Grand*, Paris, *MP\**.
- 2013–2014 **Physics degree**, *ENS Ulm*, Paris, *L3*.
- 2013–2014 **Mathematics degree**, *ENS Ulm*, Paris, *L3*.
- 2014–2017 **Diplôme de l'ENS**, *ENS Ulm*, Paris, *specialized in mathematics*.
- 2015–2016 **Master of Mathematics**, *UPMC*, Paris, *Fundamental Mathematics*.  
Applications of tropical geometry to real and complex enumerative problems, directed by Ilia Itenberg
- 2016–2016 **Exchange student**, *University of California Berkeley*.
- 2016–2017 **Master of Mathematics**, *UPMC*, Paris, *Teaching Mathematics*.  
with agrégation rank 1st
- 2017–2020 **PhD**, *Sorbonne-Universités*, Paris, .  
Refined enumeration of rational curves in toric manifolds, directed by Ilia Itenberg. Submitted July 3rd 2020 with a jury comprised of Antoine Ducros (president), Hannah Markwig, Omid Amini (referees), Alexandru Oancea, Johannes Nicaise, Grigory Mikhalkin.
- 2020–2021 **Post-doc**, *Université de Neuchâtel*, Switzerland, .

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2021–2022 **Post-doc**, *Université de Genève*, Switzerland, .

## Participations at workshops

- 01/2017 Workshop of enumerative geometry in Belalp, Switzerland
- 09/2017 Conference in memory of Jean-Jacques Risler, CIRM, Marseille, France
- 01/2018 7th frank-swiss workshop of Algebraic Geometry in Charmey, Switzerland
- 07/2018 Tropical Geometry in Europe, Toulouse, France
- 11/2018 Tropical Geometry in Europe, Nantes, France
- 05/2019 Tropical Geometry: new perspectives, Oberwolfach, Germany
- 05/2019 Tropical Geometry in Europe, Fiesch, Switzerland
- 06/2019 Gökova Geometry-Topology conference, Gökova, Turkey
- 09/2019 Tropical methods in real algebraic geometry, Oaxaca, Mexico
- 11/2019 Annual meeting of GAGC, CIRM, Marseille, France
- 01/2020 Tropical Geometry in Europe, Nantes, France
- 11/2020 Real Algebraic Geometry, CIRM, Marseille, France (postponed to 09/2022)
- 11/2020 Facets of Real Algebraic Geometry, CIRM, Marseille, France (postponed to 09/2022)
- 11/2020 Annual meeting of GAGC, CIRM, Marseille, France (cancelled)
- 06/2021 Summer School of the ANR ENUMGEOM, Le Croisic, France
- 06/2021 Conference for the 70th Birthday of V. Kharlamov, Nantes, France
- 09/2021 J.A.V.A. Summer School, Tatihou, France
- 09/2021 Tropical Geometry and Singularities, Lille, France
- 10/2021 Oberwolfach Seminar: Tropical Curves, Logarithmic Structures, and Enumerative Geometry

## Talks

- 10/2017 **Gromov-Witten invariants, lambda classes and Block-Göttsche polynomials**  
Tropical geometry seminar, Paris (France)
- 06/2018 **Refined count of tropical curves**  
Réga seminar, Paris (France)
- 07/2018 **Building lagrangian with tropical curves**  
Tropical geometry seminar, Paris (France)
- 06/2019 **Quantum indices, refined invariants and tropical geometry**  
Topology, geometry and algebra seminar, Nantes (France)
- 02/2019 **Scattering Diagrams, Quantum Indices and real enumerative geometry**  
Enumerative geometry seminar, Paris (France)
- 09/2019 **The moment problem**  
Tropical methods in algebraic geometry, Oaxaca (Mexico)
- 11/2019 **"Thomas Blomme, raconte-moi la géométrie tropicale !"**  
"Raconte-moi!" seminar, Paris (France)

- 02/2020 **Tropical Enumerative Geometry**  
Singularity Seminar, Lille, France
- 05/2020 **Refined invariants in toric surfaces and tropical geometry**  
online seminar, Neuchâtel (Switzerland)
- 06/2020 **Refined invariants in toric surfaces and tropical geometry**  
LAGARTOS (online seminar), South America
- 10/2020 **Compte raffiné de courbes rationnelles et géométrie tropicale**  
Colloque du mardi, Neuchâtel (Switzerland)
- 11/2020 **Refined invariants for rational tropical curves in arbitrary dimension**  
Seminar in Real and Complex Geometry, Tel-Aviv
- 11/2020 **Refined invariants for rational tropical curves in arbitrary dimension**  
Geneva
- 11/2020 **Refined invariants in toric surfaces**  
Real Algebraic Geometry, CIRM, Marseille (postponed to 2022)
- 12/2020 **Refined invariants in toric surfaces**  
GAGC at CIRM, Marseille (cancelled)
- 06/2021 **Refined count of real rational curves**  
Summer School, Le Croisic, France
- 08/2021 **Deformation theory of nodal curves**  
J.A.V.A. Summer School, Tatihou, France
- 09/2021 **Refined invariants in higher dimension**  
Tropical Geometry and Singularities, Lille, France
- 10/2021 **Refined invariants in higher dimension**  
Basel, Switzerland

## Publications and Preprints

- [1] A Caporaso-Harris type formula for relative refined invariants  
[arxiv.org/abs/1912.06453](https://arxiv.org/abs/1912.06453)
- [2] A Tropical Computation of Refined Toric Invariants  
[arxiv.org/abs/2001.09305](https://arxiv.org/abs/2001.09305)
- [3] A Tropical Computation of Refined Toric Invariants II  
[arxiv.org/abs/2007.02275](https://arxiv.org/abs/2007.02275)
- [4] Refined count for rational tropical curves in arbitrary dimension  
[arxiv.org/abs/2010.05777](https://arxiv.org/abs/2010.05777), Accepted for publication in *Mathematischen Annalen*.
- [5] Refined count of real oriented rational curves  
[arxiv.org/abs/2107.07286](https://arxiv.org/abs/2107.07286)
- [A] Les clefs pour l'oral MP, mathématiques, ENS-X - Sessions 2016 et 2017.  
Thomas Blomme, Louise Gassot, Quentin Guignard et Bernard Randé.  
*Ed. Calvage et Mounet*

## Teaching experiences

Université de Genève – 1205 Genève, Suisse

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- 2014-2017 Teaching assistant at Lycée Louis le Grand, Paris
- 2017-2020 Teaching assistant: Topology and Differential Calculus, ENS Ulm, Paris
- 2018 Monitoring degree's essay, ENS **Title:** About the Hilbert 16th problem
- 2019 Monitoring degree's essay, ENS **Title:** Dimers and Harnack curves
- 2020 Monitoring degree's essay, ENS **Title:** Sandpiles and tropical geometry
- 2020 Monitoring degree's essay, ENS **Title:** Kontsevich's formula and tropical geometry
- 2020-2021 Teaching assistant: Partial Differential Equations, Université de Neuchâtel, Switzerland
- 2021-2022 Teaching assistant: Topology, Université de Genève, Switzerland
- 2021-2022 Teaching assistant: Algebra II, Université de Genève, Switzerland

### Administrative work

- 2017-2020 member of the committee in charge of the selection of university students for the DMA (maths department of ENS)
- 2018-2020 Organizer of Réga Seminar (Seminar for graduate students in algebraic geometry)
- 2018-2019 Testing examination subjects for the ENS competition
- 2020-now Reviewer for zbMATH

### Computer skills

- Basic PYTHON
- Intermediate  $\LaTeX$ , Musescore

### Languages

- French Mother tongue
- English Fluent
- German Intermediate

### Hobbies

Brass Music (Trombone, Trumpet, ...), Bike.