MARCO RAMPAZZO

PERSONAL INFORMATION

Address	**Department of Mathematics, University of Antwerp** Middelheim G, M.G.228 Middelheimlaan 1 2020 Antwerp Belgium
Home address	Fruithoflaan 116 2600 Berchem (Antwerp) Belgium
Telephone number	+39 3667049854
Email	marco.rampazzo.90@gmail.com
Homepage	https://marcorampazzo.github.io

ACADEMIC ACTIVITY

Current position

Postdoctoral researcher, University of Antwerp — January 2025 – now

Previous positions

Postdoctoral researcher, University of Bologna — February 2021 – January 2025
Teaching assistant, University of Bologna — October 2021 – January 2022
Teaching assistant, University of Stavanger — October 2020 – December 2020
PhD student in mathematics, University of Stavanger — September 2016 – September 2020

Long term visits

Guest of the Paul Sabatier University, Toulouse — February 2019 – May 2019
Funding: Norwegian Research Council mobility grant

Short term visits

Guest of the University of Antwerp, Antwerp — November 21 – November 23 2024
Funding: University of Antwerp

Guest of the Jagiellonian University, Kraków — May 06 – May 17 2024
Funding: INdAM – GNSAGA, Jagielloinan University

Guest of the Chinese University of Hong Kong, Hong Kong — March 08 – March 13 2024
Funding: The Chinese University of Hong Kong

Guest of the Max Planck institute for Mathematics in the Sciences, Leipzig — June 22, 2022 – June 24, 2022
Funding: MPS MiS

Guest of the Univeristy of Augsburg, Augsburg — December 28, 2023 – December 01, 2023
Funding: University of Augsburg

Guest of the Jagiellonian University, Kraków — February 05, 2024 – February 09, 2024

Funding: Jagiellonian University

Memberships
INdAM - GNSAGA (Italian istitute of mathematics, section of algebra and geometry)

OTHER COLLABORATIONS

Algoretico s.r.l.s.
https://www.algoretico.it — January 2022 – June 2023
Topics: recommendation systems, reinforced learning, rectification problems in multiview geometry.

Hello Human s.r.l.
https://www.hellohuman.it — July 2023 – Dec 2024
Topics: natural language processing, LLM-based approach to recommendation systems, feature extraction, sentiment analysis.

Humanos s.r.l.
https://humanos.it — Dec 2024 – now
Topics: LLM-basded virtual assistants, retrieval-augmented generation, LLM-based recommendation systems.

EDUCATION

PhD in mathematics — May 2021
University of Stavanger
Supervisor: Michał Kapustka
Thesis: "Equivalences of Calabi–Yau mainfolds and roofs of projective bundles"

Master's degree in Physics — July 2016
University of Milan

Bachelor's degree in Physics — December 2013
University of Milan

RESEARCH INTERESTS AND WORK IN PROGRESS

Algebraic varieties: Calabi–Yau varieties, homogeneous varieties and homogeneous vector bundles, Fano varieties with multiple projective bundle structures (with Enrico Fatighenti, Michał Kapustka, Giovanni Mongardi). Canonical surfaces in Grassmannians (with Francesco Denisi, Enrico Fatighenti, Stevell Muller and Fabio Tanturri)

Semiorthogonal decomposition of Fano varieties: derived equivalences, Fourier–Mukai transform, homological projective duality, categorical resolution of nodal singularities (with Enrico Fatighenti, Michał Kapustka, Giovanni Mongardi, Kacper Grzelakowski)

Derived categories of rational homogeneous varieties: homogeneous vector bundles, mutations of exceptional collections (with Riccardo Moschetti, Sara Filippini)

Birational geometry: roofs of projective bundles, K-equivalence, DK-conjecture (with Ying Xie, Enrico Fatighenti, Michał Kapustka, Giovanni Mongardi)

Gauged linear sigma models: multiple geometric phases, phase transitions, variation of GIT, window categories (with Enrico Fatighenti, Michał Kapustka, Giovanni Mongardi, Will Donovan, Wahei Hara, Ying Xie).

INVITED SPEAKER

Algebra, Geometry and Number Theory Seminar.
Derived categories and birational transformations — Antwerp, November 22 2024

IMPAN colloquium.
An introduction to derived categories of homogeneous varieties — Kraków, May 16 2024

IMPANGA seminar.
Derived categories of generalized Grassmannians — Warsaw, May 11 2024

MIST workshop on Derived Categories
Generalized Grassmann flips vs pushforwards of hyperplane sections — Hong Kong, March 9 2024

Seminar of Algebraic Geometry of the University of Kraków.
DK conjecture for generalized grassmann flips — Kraków, February 9 2024

Seminar of Algebra and Number Theory of the University of Augsburg.
Full exceptional collections for homogeneous varieties — Augsburg, November 30 2023

Conference "Modern Perspectives on Birational Geometry".
Simple K-equivalence and semiorthogonal decompositions — Taipei, July 29 – August 4 2023

Workshop "Derived categories and birational geometry".
K-equivalence and derived categories — Milan, June 30 – July 1 2022

SAXAG seminar. *Derived categories and GLSM phase transitions* — Leipzig, June 23 2022

IMPANGA seminar. *Homogeneous roofs of projective bundles and semiorthogonal decompositions* — Warsaw, June 3 2022

Workshop "Grothendieck ring and derived category: a gathering".
$\mathbb{L}$-equivalence for Calabi-Yau pairs in generalized Grassmannians — Turin, April 27–28 2022

Seminar of Algebra and Geometry of the University of Bologna.
Semiorthogonal decompositons and homogeneous varieties — Bologna, June 15 2021

Seminar of Algebra of the Jagellonian University. *Computing Hodge numbers of Calabi–Yau varieties in Grassmannians* — Kraków, April 11 2019

Workshop "Motives of Calabi–Yau manifolds". *A gauged linear sigma model description for a pair of non birational Calabi–Yau threefolds* — Kraków, May 19–21 2018

CONTRIBUTED TALKS

Conference "Recent advances in classical algebraic geometry.
Hodge structures and derived categories of Fano varieties in Grassmannians. — Kraków, June 27 – July 2 2022

Workshop "Algebraic Geometry days".
Mukai roofs and K3 surfaces — Stavanger, November 25–26 2019

Conference "Nasjonalt Algebramøte 2019". *Derived equivalence of Mukai roofs: the case of K3 surfaces of degree 12* — Oslo, November 7–8 2019

Conference "Nasjonalt Matematikermøte 2018, PhD day". *A GLSM description for a pair of non birational Calabi–Yau threefolds* — Bergen, September 12 2018

SEMINARS AND COURSES

PhD course: *Derived categories of rational homogeneous varieties* — Bologna, March – April 2024
18 hours. Organizer and speaker

Seminar: *Bridgeland stability conditions* — Bologna – Chemnitz – Nancy, fall 2021
Organizer together with Simone Billi, Francesco Denisi, Franco Giovenzana, Annalisa Grossi, Mihai–Cosmin Pavel.
Homepage: https://marcorampazzo.github.io/bridgeland

Seminar: *The mathematics of gauged linear sigma models* — Toulouse, spring 2019
Organizer and speaker

PUBLICATIONS AND PREPRINTS

1. *PhD Thesis:* Marco Rampazzo. *Equivalences between Calabi–Yau manifolds and roofs of projective bundles*. (2021). https://doi.org/10.31265/usps.78
   Available online at https://ebooks.uis.no/index.php/USPS/catalog/book/78
2. *Publication:* Marco Rampazzo. *Fano fibrations and DK conjecture for relative Grassmann flips*. (2024). Accepted by Publications of RIMS. Available at https://arxiv.org/abs/2403.10393
3. *Publication:* Riccardo Moschetti and Marco Rampazzo. *Fullness of the Kuznetsov-Polishchuk exceptional collection for the spinor tenfold*. (2024). Algebras and Representation Theory. https://doi.org/10.1007/s10468-023-10246-6
4. *Publication:* Marco Rampazzo. *New counterexamples to the birational Torelli theorem for Calabi–Yau manifolds*. (2024). Proceedings of the American Mathematical Society. https://doi.org/10.1090/proc/16745
5. *Publication:* Enrico Fatighenti, Michał Kapustka, Giovanni Mongardi, Marco Rampazzo. *The generalized roof $F(1,2,n)$: Hodge structures and derived categories*. (2022). Algebras and Representation Theory 26, 2313–2342 (2023). https://doi.org/10.1007/s10468-022-10173-y
6. *Publication:* Michał Kapustka, Marco Rampazzo. *Mukai duality via roofs of projective bundles*. Bull. Lond. Math. Soc. (2022). https://doi.org/10.1112/blms.12597
7. *Publication:* Michał Kapustka, Marco Rampazzo. *Torelli problem for Calabi-Yau threefolds with GLSM description*. Communications in Number Theory and Physics, Volume 13, No. 4 (2019). https://dx.doi.org/10.4310/CNTP.2019.v13.n4.a2
8. *Preprint:* Marco Rampazzo, Ying Xie. *Derived equivalence for the simple flop of type $D5$*. (2024). Available at https://arxiv.org/abs/2410.20446
9. *Preprint:* Marco Rampazzo. *Calabi–Yau fibrations, simple K-equivalence and mutations*. (2020). Available at https://arxiv.org/abs/2006.06330