

MARCO RAMPAZZO

PERSONAL INFORMATION

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ACADEMIC ACTIVITY

Current position

Postdoctoral researcher, University of Bologna

February 2021 – now

Previous positions

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

Supervisor: Michał Kapustka

Thesis: “Equivalences of Calabi–Yau manifolds and roofs of projective bundles”

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 Jagiellonian University, Krakow

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, Krakow

February 05, 2024 – February 09, 2024

Funding: Jagiellonian University

Memberships

INdAM - GNSAGA (Italian institute 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 – now

Topics: natural language processing, LLM-based approach to recommendation systems, feature extraction, sentiment analysis.

EDUCATION

Master's degree in Physics

University of Milan

July 2016

Bachelor's degree in Physics

University of Milan

December 2013

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, Maxim Smirnov, Max Briest, Ying Xie)

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).

INVITED SPEAKER

IMPAN colloquium.

An introduction to derived categories of homogeneous varieties

Krakow, 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 Krakow.

DK conjecture for generalized grassmann flips

Krakow, February 9 2024

Seminar of Algebra and Number Theory of the University of Augsburg. <i>Full exceptional collections for homogeneous varieties</i>	Augsburg, November 30 2023
Conference “Modern Perspectives on Birational Geometry”. <i>Simple K-equivalence and semiorthogonal decompositions</i>	Taipei, July 29 – August 4 2023
Workshop “Derived categories and birational geometry”. <i>K-equivalence and derived categories</i>	Milan, June 30 – July 1 2022
SAXAG seminar. <i>Derived categories and GLSM phase transitions</i>	Leipzig, June 23 2022
IMPANGA seminar. <i>Homogeneous roofs of projective bundles and semiorthogonal decompositions</i>	Warsaw, June 3 2022
Workshop “Grothendieck ring and derived category: a gathering”. <i>\mathbb{L}-equivalence for Calabi–Yau pairs in generalized Grassmannians</i>	Turin, April 27–28 2022
Seminar of Algebra and Geometry of the University of Bologna. <i>Semiorthogonal decompositions and homogeneous varieties</i>	Bologna, June 15 2021
Seminar of Algebra of the Jagellonian University. <i>Computing Hodge numbers of Calabi–Yau varieties in Grassmannians</i>	Kraków, April 11 2019
Workshop “Motives of Calabi–Yau manifolds”. <i>A gauged linear sigma model description for a pair of non birational Calabi–Yau threefolds</i>	Kraków, May 19–21 2018

CONTRIBUTED TALKS

Conference “Recent advances in classical algebraic geometry. <i>Hodge structures and derived categories of Fano varieties in Grassmannians.</i>	Kraków, June 27 – July 2 2022
Workshop “Algebraic Geometry days”. <i>Mukai roofs and K3 surfaces</i>	Stavanger, November 25–26 2019
Conference “Nasjonalt Algebramøte 2019”. <i>Derived equivalence of Mukai roofs: the case of K3 surfaces of degree 12</i>	Oslo, November 7–8 2019
Conference “Nasjonalt Matematikermøte 2018, PhD day”. <i>A GLSM description for a pair of non birational Calabi–Yau threefolds</i>	Bergen, September 12 2018

SEMINARS AND COURSES

PhD course: <i>Derived categories of rational homogeneous varieties</i> 18 hours. Organizer and speaker	Bologna, March – April 2024
Seminar: <i>Bridgeland stability conditions</i> Organizer together with Simone Billi, Francesco Denisi, Franco Giovenzana, Annalisa Grossi, Mihai–Cosmin Pavel. Homepage: https://marcorampazzo.github.io/bridgeland	Bologna – Chemnitz – Nancy, fall 2021
Seminar: <i>The mathematics of gauged linear sigma models</i> Organizer and speaker	Toulouse, spring 2019

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*: 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>
3. *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>
4. *Publication*: Enrico Fatighenti, Michał Kapustka, Giovanni Mongardi, Marco Rampazzo. *The generalized roof $F(1, 2, n)$: Hodge structures and derived categories*. (2022). Accepted by *Algebras and Representation Theory*. Available at <https://arxiv.org/abs/2110.10475>
5. *Publication*: Michał Kapustka, Marco Rampazzo. *Mukai duality via roofs of projective bundles*. *Bull. Lond. Math. Soc.* (2022). <https://doi.org/10.1112/blms.12597>
6. *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>
7. *Preprint*: Marco Rampazzo. *Fano fibrations and DK conjecture for relative Grassmann flips*. (2024). Available at <https://arxiv.org/abs/2403.10393>
8. *Preprint*: Marco Rampazzo. *Calabi–Yau fibrations, simple K -equivalence and mutations*. (2020). Available at <https://arxiv.org/abs/2006.06330>
9. *In preparation*: Marco Rampazzo, Ying Xie. *Derived equivalence for the flop of type D_5 and double mirror Calabi–Yau fivefolds*. (2024).