Seminario di Algebra & Geometria

Dipartimento di Matematica “Guido Castelnuovo”
SAPIENZA Università di Roma
A.A. 2026/2027

Mercoledì 30 settembre 2026 - ore 14:00

Francesco Fournier-Facio (University of Cambridge)

On the discovery of non-sophic groups

Soficity is a property of groups generalising at once amenability and residual finiteness. It was introduced by Gromov and Weiss as a convenient class in which to establish many outstanding open questions in group theory. On 1 August 2026, OpenAI announced that they found the first example of a non-sofic group, the construction builds heavily on work of Kun from 2016 and Kun--Thom from 2019. I will do my best to recount this story.

Mercoledì 7 Ottobre 2026 - ore 14:00

Julia Schneider (Université Bourgogne Europe)

Canonical semi-orthogonal decompositions for derived categories of G-surfaces

In this talk, I discuss a joint work with Alexey Elagin and Evgeny Shinder that lies at the intersection of birational and derived geometry. What kind of geometric information is encoded in the derived category of a variety, and how does this information behave under birational maps? We consider the case of surfaces equipped with a group action, and show that their derived categories admit a canonical (mutation-equivalence class of) semi-orthogonal decomposition that "behaves well" with respect to birational geometry. We call such decompositions "atomic". If time permits, I will discuss applications to (bi-)rationality questions.

Mercoledì 14 ottobre 2026 - ore 14:00

Alberto Rodriguez-Vazquez (Universidade de Santiago de Compostela)

Inhomogeneous Einstein metrics on complex projective spaces

The complex projective space CP^n, which parametrizes the complex lines in C^{n+1}, is one of the most extensively studied objects in algebraic and complex geometry. The first Einstein metric discovered on CP^n was the Fubini–Study metric, and in 1965 Berger asked whether it was the only one. In 1982, Ziller constructed a second homogeneous Einstein metric in odd complex dimensions. Berger's question remained open in even complex dimensions, where Fubini–Study was the only known Einstein metric. Together with Gonzalo Cao Labora (EPFL, Switzerland), we have constructed new Einstein metrics on CP^n for n= 3, 4, 5, 6, 7. These are the first known non-homogeneous examples and, together with the Fubini–Study and Ziller metrics, the only ones known to date. Our construction settles Berger's question in the previously open cases n = 4 and n = 6.
This talk is part of the activities of the FIS2 project BeyondCY3 - CUP B53C25001070001. More information available at:
https://sites.google.com/uniroma1.it/lfoscolo/fis2-beyondcy3/events

Mercoledì 28 ottobre 2026 - ore 14:00

Tatsuro Kawakami (University of Tokyo)

Endomorphisms of varieties and Bott vanishing

We prove that normal projective varieties admitting int-amplified endomorphisms satisfy Bott vanishing. As an application, we give an alternative proof of the fact that the only smooth Fano threefold admitting a nontrivial endomorphism of degree larger than one is P^3. This is joint work with Burt Totaro. If time permits, I will also discuss a local analogue of our results.

Mercoledì 04 novembre 2026 - ore 14:00

Ronan Terpereau (Université de Lille)

Equivariant automorphism groups and real forms of complexity-one varieties

Let G be a connected reductive algebraic group over a perfect field. I will discuss the representability of equivariant automorphism groups of certain G-varieties. More precisely, for a broad class of G-varieties, called G-varieties of complexity one, I will explain why this group is representable by a group scheme locally of finite type, and even by a linear algebraic group in the almost homogeneous case. Finally, I will show how understanding the equivariant automorphism group, particularly through a description in terms of an exact

sequence, allows us to address the question of the finiteness of real forms of G-varieties of complexity one.
This is joint work with Giancarlo Lucchini Arteche (arXiv:2507.18475).

Mercoledì 11 novembre 2026 - ore 14:00

Coline Emprin (University of Stockholm)

Formality Transmission

Here are seemingly unrelated problems: Koszul duality for the category of a reductive group in representation theory, splitting Drinfeld space's de Rham complex in the p-adic Langlands program, deformation quantization of Poisson manifolds in mathematical physics. And yet, all of them boil down to the same question: formality. A differential graded algebraic structure A (e.g. an associative algebra, a Lie algebra, a pre-Calabi-Yau algebra, etc.) is formal if it is related to its homology H(A) by a zig-zag of quasi-isomorphisms preserving the algebraic structure.

The examples mentioned above rely on criteria that guarantee formality: formality descent, formality in families, intrinsic formality, domination techniques, and many others. In this talk, I will prove that all these criteria arise as special cases of a single theorem: formality transmission. On the one hand, this theorem unifies the aforementioned results into a single theory; on the other hand, it generalizes these criteria in diverse directions, in particular over any coefficient ring and for algebraic structures with several outputs: algebras encoded by properads.

Mercoledì 18 novembre 2026 - ore 14:00

Federico Giusti (Sapienza Università di Roma)

TBA

TBA

Mercoledì 25 novembre 2026 - ore 14:00

Joel Fine (Université Libre de Bruxelles)

TBA

TBA

Mercoledì 02 dicembre 2026 - ore 14:00

Yifan Chen (Università degli Studi di Roma Tor Vergata)

TBA

TBA

Mercoledì 09 dicembre 2026 - ore 14:00

Francesco Maria Saettone (Weizmann Institute of Science)

TBA

TBA

Mercoledì 24 febbraio 2027 - ore 14:00

Maxime Fairon (Université Bourgogne Europe)

TBA

TBA

Mercoledì 03 marzo 2027 - ore 14:00

Luca Casarin (University of Bonn)

TBA

TBA

Mercoledì 10 marzo 2027 - ore 14:00

Marco Radeschi (Università di Torino)

TBA

TBA

Mercoledì 07 aprile 2027 - ore 14:00

Alessio Sammartano (Università di Torino)

TBA

TBA

Mercoledì 14 aprile 2027 - ore 14:00

Lucia Martín-Merchán (Universidad de Málaga)

TBA

TBA

Mercoledì 21 aprile 2027 - ore 14:00

Angelina Zheng (Università di Pisa)

TBA

TBA

Mercoledì 28 aprile 2027 - ore 14:00

René Schoof (Università di Roma Tor-Vergata)

TBA

TBA

Mercoledì 05 maggio 2027 - ore 14:00

Marc Abboud (Università di Neuchâtel)

TBA

TBA

Mercoledì 09 giugno 2027 - ore 14:00

Timothée Bénard (Université Sorbonne Paris Nord)

TBA

TBA