Al@Bicocca seminar

You are all welcome to the next bite of the series "Al@Bicocca"

which is meant to give you a small taste of the Algebra at Bicocca and beyond



5 December 2024 14.00 (UTC+1)

Online venue: WebEx
University of Milano-Bicocca
Via R. Cozzi 55
Milano (IT)

Organizers:

Marco Barbieri Marco Fusari Nicola Grittini Ettore Marmo Francesco Matucci Matteo Tarocchi

Website **(**

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The cohomology of the symmetric groups, Hopf rings, and extended symmetric powers

Abstract: The direct sum of the cohomology groups $H^*(\Sigma_n; V^{\otimes n})$ of the symmetric group Σ_n on n objects, with coefficients in the representation given by the n^{th} tensor power of a graded algebra V, is endowed with a very rich algebraic structure. Precisely, it is a Hopf ring, a ring object in the category of cocommutative coalgebras.

In my talk, I will recall the definition of Hopf ring, and I will show the aforementioned structure can be used to effectively perform computations in the cohomology rings above. I will then discuss the relation with the cohomology of the extended symmetric powers of topological spaces, which are widely used by topologists. This is mostly based on an article published in 2023 by myself, Paolo Salvatore, and Dev Sinha. Finally, I will briefly discuss applications of this framework (some of them more recent): an algebraic one to finite reflection groups, and a topological and representation theoretic one to unordered flag manifolds.