

A combinatorial method for the reduction number of an ideal

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In the study of commutative rings, several algebraic properties are captured by numerical invariants which are defined in terms of ideals and their powers. Among these, of particular relevance are the reduction number and analytic spread of an ideal, which control the growth of the powers of the given ideal for large exponents. Unfortunately, these invariants are usually difficult to calculate for arbitrary ideals, and different methods might be required depending on the specific features of the class of ideals under examination. In this talk, I will discuss a combinatorial method to calculate the reduction number of an ideal, based on a homological characterization in terms of the regularity of a graded algebra. This is part of joint work with Louiza Fouli, Kriti Goel, Haydee Lindo, Kuei-Nuan Lin, Whitney Liske, Maral Mostafazadehfard and Gabriel Sosa.

In Special Session 13 on Influences of Combinatorics and Topology in Commutative Algebra at the Mathematical Congress of the Americas 2025.