

Combinatorics of slices of cubes

Chiara Meroni

In this talk, I will discuss our complete computational classification of all combinatorial types of hyperplane sections, or slices, of the regular cube in dimensions up to six or seven. I will explain how we determined the exact number of distinct types in each dimension, and the connection to existing literature. Our approach blends combinatorial, algebraic, and numerical methods, and all results are certified. Beyond simply counting these types, I will highlight what the data reveal: new structural results about cube slices, and a collection of conjectures that emerged from exploring this computational landscape. This is joint work with Marie-Charlotte Brandenburg.