

Hypergraphs and Regularity of Square-Free Monomial Ideals

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This is joint work with Jason McCullough. We define a new combinatorial object, which we call a labeled hypergraph, uniquely associated to any square-free monomial ideal. We provide a general upper bound on the regularity of a square-free monomial ideal in terms of simple combinatorial properties of its labeled hypergraph. We also give specific formulas for the regularity of square-free monomial ideals with certain labeled hypergraphs.