THIAGO DE HOLLEBEN, Dalhousie University

Rees algebras and Lefschetz properties of squarefree monomial ideals

Many interesting algebraic properties of edge ideals of graphs can be checked by simply verifying whether the underlying graph is bipartite or not. Some examples of this include: the linear type property, the birational property of the rational map the ideal defines, and the equality of symbolic and ordinary powers. From a graph theoretic perspective, a graph (with more edges than vertices) is not bipartite if and only if its incidence matrix has full rank. In this talk, we will see how these equivalences help in the study of Lefschetz properties. We will also see how the study of Lefschetz properties may bring new perspectives into the study of these algebraic properties. In particular, we will see hints of connections between symbolic defects of squarefree monomial ideals and f-vectors of simplicial complexes.