Steiner configurations ideals: containment and colorability

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Abstract

We show that Stable Harbourne Conjecture and Stable Harbourne–Huneke Conjecture hold for the defining ideal of a Complement of a Steiner configuration of points in $\mathbb{P}^n_k$. We study the relation between a particular notion of colorability of hypergraphs associated to Steiner configurations of points. We also find results on the containment problem for the cover ideal associated to these special hypergraphs. We can also show that Chudnovsky's Conjecture and Demailly's Conjecture are satisfied by the ideal defining Complement of Steiner configuration of points. – This is a joint work with E. Ballico, G. Favacchio and E. Guardo. We dedicate the paper to L. Millazzo who passed away in 2019.

Keywords: Harbourne–Huneke Conjecture, Steiner configuration, hypergraph, vertex coloring.