

ALGEBRA* & NUMBER THEORY SEMINAR

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Thursday, March 2nd at 3:00pm in Hume 321

Title: On the diameter of dual graphs of Stanley-Reisner rings with Serre (S_2) property and Hirsch type bounds on abstractions of polytopes

Abstract: Let R be a Noetherian commutative ring of positive dimension. The Hochster-Huneke graph of R (sometimes called the dual graph of $\text{Spec } R$ and denoted by $\mathcal{G}(R)$) is defined as follows: the vertices are the minimal prime ideals of R , and the edges are the pairs of prime ideals (P_1, P_2) with height $(P_1 + P_2) = 1$. If R satisfies Serre's property (S_2) , then $\mathcal{G}(R)$ is connected. In this talk, we provide lower and upper bounds for the maximum diameter of Hochster-Huneke graphs of Stanley-Reisner rings satisfying (S_2) . These bounds depend on the number of variables and the dimension. Hochster-Huneke graphs of (S_2) Stanley-Reisner rings are a natural abstraction of the 1-skeletons of polyhedra. We discuss how our bounds imply new Hirsch-type bounds on 1-skeletons of polyhedra.