Connected domination in graphs and the v-number of binomial edge ideals

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The v-number of a graded ideal is an algebraic invariant introduced by Cooper et al., and originally motivated by problems in algebraic coding theory. In this work we study the case of binomial edge ideals and we establish a significant connection between their v-numbers and the concept of connected domination in graphs. More specifically, I will show that the localization of the v-number at one of the minimal primes of the binomial edge ideal J_G of a graph G coincides with the connected domination number of the defining graph, providing a first algebraic description of the connected domination number. Building on some known results on edge ideals, I will present how the v-number of J_G behaves under GrŽbner degeneration when G is a closed graph.

Joint work with Lisa Seccia from University of Neuchâtel.

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