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Fabrizio Zanello* (zanello@mtu.edu). *The Gorenstein Interval Conjecture in low socle degree.*

Roughly ten years ago, I proposed some so-called “Interval Conjectures” for graded artinian level algebras, which, if true, would imply a strong (and very natural) structural property for their h -vectors. In general, these conjectures are still wide open. In particular, the Gorenstein Interval Conjecture (GIC) states that, if $\alpha \geq 2$ and $(1, \dots, h_i, \dots, h_{e-i}, \dots, h_e = 1)$ and $(1, \dots, h_i + \alpha, \dots, h_{e-i} + \alpha, \dots, h_e = 1)$ are Gorenstein h -vectors that only differ in two symmetric degrees i and $e - i$, then $(1, \dots, h_i + \beta, \dots, h_{e-i} + \beta, \dots, h_e = 1)$ is also Gorenstein for all $\beta = 1, \dots, \alpha - 1$.

In this talk, I will outline a proof of the GIC for $e \leq 5$. It combines a few different methods coming from commutative algebra and classical algebraic geometry, where suitable “maximal rank” properties play a key role. (This is part of an upcoming paper with Richard Stanley and my former MIT student Sung Gi Park.) (Received January 14, 2018)