

Commutative Algebra Seminar

Sums of squares, Hankel index, and almost real rank

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Abstract: The difference between nonnegative polynomials and sums of squares is an important topic in real algebraic geometry, and the Hankel index of a variety is a natural (but subtle) invariant that quantifies this difference. Surprising connections were found between the Hankel index and the commutative algebra of the variety, namely the $N_{\{2,p\}}$ property of linear syzygies for the free resolution - although this only provides half the story. For curves of almost minimal degree, we complete the picture, by determining the Hankel index in terms of a new rank called almost real rank, which interpolates between real (Waring) rank and complex border rank. This is joint work with Greg Blekherman and Jaewoo Jung.

Wednesday, November 10 at 3:00 PM in Zoom