On growth of the Hilbert function of a quadratic ideal

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Given a homogeneous ideal in K[x_1, . . . , x_n] whose generators contain a regular sequence, Eisenbud, Green and Harris conjectured (EGH conjecture) a finer bound on its Hilbert function than well known Macaulay's bound by replacing the role of lexicographic ideals with lex-plus-powers ideals. Later, motivated by the EGH conjecture, Charalambous and Evans conjectured a similar extremal behavior of the lex-plus-powers ideals for Betti numbers of the homogeneous ideals.
Although there has been some progress on the EGH conjecture, it remains widely open since 90s. In this talk, we focus our attention on the homogeneous ideals whose generators containing a regular sequence of quadrics, and talk about the recent progress on this conjecture. This is a joint work with Mel Hochster.