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Title: Interpolation and the weak Lefschetz property

Abstract: A basic problem in Hermite interpolation theory is to determine the least degree of a homogeneous polynomial that vanishes to some specified order at every point of a given finite set. This is related to the problem of finding the Castelnuovo-Mumford regularity of an ideal generated by powers of linear forms. We discuss results in the case when the number of points or linear forms is small compared to the dimension of their linear span. As an application we show that conjectures on the failure of the weak Lefschetz property by Harbourne, Schenck, and Seceleanu as well as by Migliore, Miró-Roig, and the speaker are true asymptotically. This also relies on a new result about Eulerian numbers. They count the number of permutations of a finite set with a specified number of ascents. Throughout the talk we present several open problems.