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Extremal free resolutions over monomial complete intersections.

Let S be a polynomial ring over a field k of characteristic 0, and let R be a complete intersection in S defined by powers of the variables. We prove that, in the Hilbert scheme parametrizing the closed subschemes of Proj R with a fixed Hilbert polynomial p, there exists a point whose saturated ideal I achieves the largest possible Betti numbers in the finite free resolution of R/I over S and in the infinite free resolution of R/I over R. In the case of a regular ring, the ideal I also maximizes the infinite free resolution of k over R/I. This is a joint work with Alessio Sammartano.