

1030-13-230

Giulio Caviglia* (caviglia@msri.org), Department of Mathematics, Purdue University, 150 N. University Street, West Lafayette, IN 47907-2067. *Sparse filter regular sequences and extremal Betti numbers.*

We show that the extremal Betti numbers of a homogeneous ideal $I \subset R = K[X_1, \dots, X_n]$ and its revlex initial ideal are the same, provided that X_n, \dots, X_1 form a filter regular sequence for R/I .

We describe how to find sparse change of coordinates in order to obtain the above condition. In particular we prove that the sparsity of a filter regular sequence for R/I is bounded above by the one of $R/in(I)$.

We derive some algorithms to compute the extremal Betti numbers, and in particular we improve the methods of Bermejo and Gimenez for calculating the Castelnuovo-Mumford regularity. (Received August 03, 2007)