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Ko, Hyoung J., Yonsei University, Seoul 120-749, Korea

Some complete intersection and their minimal prime ideals

As a consequence of the Buchsbaum-Eisenbud structure theorem, the Gorenstein ideals of grade three have an odd number generators. In fact, the ideals $\mathfrak{I}$ in a regular local ring R such that $R/\mathfrak{I}$ is Gorenstein are subject to some surprising restrictions: If $grade\mathfrak{I} = g$, then $\mathfrak{I}$ may be minimally generated by g elements but not by $g+1$ elements. If $g \geq 4$, every minimal number of generators $\geq g+2$ is possible. A certain class of complete intersection Gorenstein ideals of grade g will be presented. In particular, we characterize the complete intersections of grade three by means of minimal prime ideals and linkage theory.

Reference: D. A. Buchsbaum and D. Eisenbud, Algebra structures for finite free resolutions and some structure theorems for ideals for codimension 3, *Amer. J. Math.* **99** (1977), 447–485.