

Special Fiber Rings of Certain Height Four Gorenstein Ideals

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Abstract

Let S be a set of four variables, \mathbf{k} a field of characteristic not equal to two such that \mathbf{k} contains all square roots, and I a height four Gorenstein ideal of $\mathbf{k}[S]$ generated by nine quadratics so that I has a Gorenstein-linear resolution. We define a complex X_\bullet so that each module of X_\bullet is the tensor product of a certain polynomial ring Q in nine variables and a direct sum of indecomposable $\mathbf{k}[\text{Sym}(S)]$ -modules and the differential maps are Q - and $\mathbf{k}[\text{Sym}(S)]$ -module homomorphisms. Work with the Macaulay2 software suggests that $H_0(X_\bullet)$ is the special fiber ring of I and $H_1(X_\bullet) = 0$.