

Canonical Hilbert-Burch matrices for ideals of $k[x, y]$

Aldo Conca, University of Genova, Italy

Let k be a field and I be an ideal of $R = k[x, y]$ such that R/I is Artinian, that is, it is of finite dimension as a k -vector space. The Hilbert-Burch theorem implies that I is generated by the t -minors of a matrix A of size $(t+1) \times t$ with entries in R . We call A a Hilbert-Burch matrix for I . An ideal I has many Hilbert-Burch matrices but we show that there is a canonical choice. As an application, we determine the dimension of certain affine Groebner cells related to Hilbert schemes and their Betti strata recovering results of Ellingsrud and Stromme, Goettsche and Iarrobino.