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Classifying families of Artinian or one-dimensional quotients of $k[x_0, .., x_n]$ with fixed Hilbert function

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The Hilbert function stratum GradAlg(H) of the Hilbert scheme Hilb$^p(\mathbb{P}^n)$ with fixed Hilbert function and the corresponding parameter space representing flat Artinian quotients are studied with respect to dimension, smoothness and reducibility. In the Artinian case the open subscheme LevAlg(H) (*resp.* Gor$^H(R)$) of GradAlg(H) of level (*resp.* Gorenstein) quotients may also be described as a determinantal loci in some Grassmannian, cut out by certain catalecticant minors (Iarrobino-Kanev and Chipalkatti-Geramita).
In the applications we focus on level (*resp.* Gorenstein) algebras of codimension 3 (*resp.* 4) and the dimension and reducibility of LevAlg(H), and we prove a conjecture of Iarrobino on the reducibility of LevAlg$(1, 3, 6, 10, 14, 10, 6, 2)$.
