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The Hermite-Joubert Problem over p -fields

An 1861 theorem of Ch. Hermite asserts that for every field extension E/F of degree 5 there exists an element $a \in E$ such that $F(a) = E$ and the minimal polynomial of a over F is of the form

$$f(x) = x^5 + b_2x^3 + b_4x + b_5.$$

An easy application of Newton's formulas shows that this is equivalent to $\mathrm{tr}_{E/F}(a) = \mathrm{tr}_{E/F}(a^3) = 0$. A similar result for étale algebras of degree 6 was proved by P. Joubert in 1867. In this talk, based on joint work with Matthew Brassil, we will discuss the following (still largely open) question: Can these classical theorems be extended to field extensions of degree $n \geq 7$?