On quaternion algebras split by a given extension and hyperelliptic curves

Abstract

This is work joint with Louis Rowen and Jean-Pierre Tignol. Let F be a field of characteristic not 2 and let $\pi(x)$ denote a separable polynomial of even degree over F. For $\alpha \in F^\times$ we construct an Azumaya algebra A_α whose simple images with center F determine the relative Brauer group of classes of algebras split by the function field of the hyperelliptic curve $y^2 = \alpha\pi(x)$. These simple algebras are quaternion algebras and are also split by the extension $F(\pi) = F[x]/(\pi(x))$. We relate the algebra A_α to a Clifford algebra introduced in earlier work with Tignol to describe the complete set of classes of quaternon algebras split by $F(\pi)$. We will include explicit results in the case where $\pi(x)$ has degree at most 6.