Indecomposable division algebras over function fields of p-adic curves

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Abstract

A division algebra D over a field K is indecomposable if it cannot be written as a tensor product of two non-trivial K-division algebras, i.e.,

$$D \cong D_1 \otimes_K D_2 \implies D_1 \cong D \text{ or } D_2 \cong D \qquad (\text{for } K\text{-division algebras } D_i)$$

Only in 1979 were the first examples of indecomposable division algebras of prime power period/index shown to exist (by Saltman and Amitsur, Rowen, and Tignol), and since then many other constructions have been obtained. In this talk, for any prime $p \neq 2$ we show the existence of indecomposable division algebras with period p^2 and index p^3 over the function field of a smooth projective curve over $\mathbb{Z}_p$.