Maximal curves in low genera and the Wiman sextic

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Curves over finite fields attaining the Hasse-Weil upper bound have been intensively studied in recent years. Since the Kleiman-Serre covering result ensures that any cover of a maximal curve is also maximal, efforts have been made to find maximal curves not covered (or at least not Galois-covered) by the Hermitian curve, the best known example of a maximal curve. In this seminar we will focus on the case of maximal curves over a quadratic extension of a prime field, and the case of the Wiman sextic, showing how to investigate its \( \mathbb{F}_{p^2} \)-maximality for infinite values of the prime \( p \), its automorphism group and showing that it is sometimes not Galois-covered by the Hermitian curve.