**A new class of maximal hyperelliptic curves**

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Abstract - A (smooth, complete, absolutely irreducible) curve *C* defined over a finite field *k*is called maximal if its number of *k*-rational points reaches the Hasse-Weil bound:
#*C*(*k*) = 1+ #*k +* 2\*genus(*C*)\*\sqrt{#*k*}.

Combining classical results on permutation polynomials with work of Shimura and Taniyama on slopes of Frobenius for CM abelian varieties and finally, 2-descent methods, we obtain infinitely many new examples of maximal hyperelliptic curves.

This is joint work with Saeed Tafazolian (Univ. of Campinas, Brazil).