

Plane algebraic curves with many symmetries in positive characteristic

Gabor Korchmaros

UNIVERSITY OF BASILICATA

Abstract

For a given finite subgroup G of $PGL(3, q)$, let $d(G)$ be the smallest integer that is the degree of a G -invariant irreducible plane curve defined over a finite field of characteristic p with $q = p^h$. We discuss the following three questions. (i) find $d(G)$ for groups G of larger order compared to d ; (ii) find the largest positive integer $e(G)$ depending on q such that there is no G -invariant irreducible plane curve of degree $d(G) + e(G)$ (i.e. $d(G) + e(G)$ is the second smallest value in the spectrum and $e(G) - 1$). (iii) determine all G -invariant irreducible plane curves of degree $d(G)$.