Pérez, Mariana; Privitelli, Melina

On the number of solutions of systems of certain diagonal equations over finite fields.

(English) [Zbl 07493020]


Summary: In this paper we obtain explicit estimates and existence results on the number of $\mathbb{F}_q$-rational solutions of certain systems defined by families of diagonal equations over finite fields. Our approach relies on the study of the geometric properties of the varieties defined by the systems involved. We apply these results to a generalization of Waring’s problem and the distribution of solutions of congruences modulo a prime number.

MSC:

11T06 Polynomials over finite fields
05E05 Symmetric functions and generalizations
14G05 Rational points
14G15 Finite ground fields in algebraic geometry
11G25 Varieties over finite and local fields

Keywords:
finite fields; systems of diagonal equations; rational solutions; complete intersections; singular locus

Full Text: DOI

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