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On the Carlitz rank of permutation polynomials over finite fields: recent developments.

(English) [Zbl 1445.11140](#)

Bouw, Irene I. (ed.) et al., Women in numbers Europe II. Contributions to number theory and arithmetic geometry, Leiden, The Netherlands, September 26–30, 2016. Cham: Springer. Assoc. Women Math. Ser. 11, 39–55 (2018).

Summary: The Carlitz rank of a permutation polynomial over a finite field \mathbb{F}_q is a simple concept that was introduced in the last decade. In this survey article, we present various interesting results obtained by the use of this notion in the last few years. We emphasize the recent work of the authors on the permutation behavior of polynomials $f + g$, where f is a permutation over \mathbb{F}_q of a given Carlitz rank, and $g \in \mathbb{F}_q[x]$ is of prescribed degree. The relation of this problem to the well-known Chowla-Zassenhaus conjecture is described. We also present some initial observations on the iterations of a permutation polynomial $f \in \mathbb{F}_q[x]$ and hence on the order of f as an element of the symmetric group S_q .

For the entire collection see [\[Zbl 1398.11005\]](#).

MSC:

[11T06](#) Polynomials over finite fields

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