

# Index and Carlitz Rank of Permutation Polynomials

LEYLA IŞIK

SALZBURG UNIVERSITY

( Joint work with I. E. Shparlinski and A. Winterhof )

Carlitz rank and index are two important measures for the complexity of a permutation polynomial. In particular, for cryptographic applications we need both, a high Carlitz rank and a high index. In this article we study the relationship between Carlitz rank and index. More precisely, if the permutation polynomial is neither close to a polynomial of the form  $ax$  nor a rational function of the form  $ax^{-1}$ , then we show that the Carlitz rank is  $q + O(\ell + q^{1/2})$ , where  $\ell$  is its index.