

talk

POLYNOMIAL PERMUTATIONS OF FINITE RINGS AND FORMATION OF LATIN SQUARES

Vadiraja Bhatta G.R.

Department of Mathematics,
Manipal Institute of Technology,
Manipal University, Manipal - 576104, Karnataka, India
vadiraja.bhatta@manipal.edu [presenter and corresponding author]

Shankar B. R.

Department of Mathematical And Computational Sciences (MACS),
National Institute of Technology Karnataka,
Surathkal, Karnataka, India
brs@nitk.ac.in

Combinatorial designs have wide applications in various fields, including coding theory and cryptography. Many examples of combinatorial designs can be listed like linked design, balanced design, one-factorization etc. Latin square is one such combinatorial concept. In this talk, we have considered different types of permutation polynomials over some finite rings. Over finite rings, we have observed that univariate permutation polynomials permute the ring elements whereas bivariate permutation polynomials form Latin squares. The Latin squares formed thus by permutation polynomials over finite rings are discussed with respect to various Latin square properties.

REFERENCES

- [1] Ronald L. Rivest, Permutation Polynomials modulo 2^w . *Finite Fields and their Applications*, 7(2),287-292, 2001.
- [2] Vadiraja Bhatta G. R. and Shankar B. R, Variations of Orthogonality of Latin Squares. *International Journal of Mathematical Combinatorics*, Vol.3, 55-61, 2015.
- [3] Vadiraja Bhatta G. R. and Shankar B. R, Permutation Polynomials modulo $n, n \neq 2^w$ and Latin Squares. *International Journal of Mathematical Combinatorics*, Vol.2, 58-65, 2009.