

EVALUATION CODES FROM LINEAR SYSTEMS OF CONICS

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A new family of evaluation codes in a vector space of dimension ≥ 2 over a finite field \mathbb{F}_q was given in [1] where linear combinations of elementary symmetric polynomials are evaluated on the set of all distinguished points, that is points with pairwise distinct coordinates. A generalization arises from m -dimensional linear systems of symmetric polynomials; see [2]. In this talk we present some new results and open problems in this direction. Computation for small values of $q = 7, 9$ shows that carefully chosen 3-dimensional linear systems produce $[\frac{1}{2}q(q-1), 3, d]$ -codes that have minimum distance d equal to the optimal value minus 1.

References

- [1] M. Datta, T. Johnsen. *Codes from symmetric polynomials*, Des. Codes and Cryptogr., **91**, 747–761, 2023.
- [2] B. Gatti, G. Korchmáros, G. P. Nagy, V. Pallozzi Lavorante, G. Schulte, *Evaluation codes arising from symmetric polynomials*, Des. Codes and Cryptogr., **93**, 3361–3373, 2025.