

Fernando, Neranga; Hou, Xiang-Dong

A piecewise construction of permutation polynomials over finite fields. (English)

Zbl 1254.05008

Finite Fields Appl. 18, No. 6, 1184-1194 (2012).

Summary: We describe a piecewise construction of permutation polynomials over a finite field \mathbb{F}_q which uses a subgroup of \mathbb{F}_q^* , a “selection” function, and several “case” functions.

Permutation polynomials obtained by this construction unify and generalize several recently discovered families of permutation polynomials.

MSC:

11T06 Polynomials over finite fields

Cited in **15** Documents

Keywords:

finite field; normal basis; permutation polynomial

Full Text: [DOI](#)

References:

- [1] Akbary, A.; Ghioca, D.; Wang, Q., On constructing permutations of finite fields, Finite fields appl., 17, 51-67, (2011) · [Zbl 1281.11102](#)
- [2] Brioschi, F., Des substitutions de la forme $\theta(r) \equiv \varepsilon(r^{n-2} + ar^{\frac{n-3}{2}})$ pour un nombre n premier de lettres, Math. ann., 2, 467-470, (1870)
- [3] Brioschi, F., Un teorema sulla teoria delle sostituzioni, Rend. reale ist. lombardo sci. lett. (2), 12, 483-485, (1879) · [Zbl 11.0102.01](#)
- [4] Carlitz, L., Some theorems on permutation polynomials, Bull. amer. math. soc., 68, 120-122, (1962) · [Zbl 0217.33003](#)
- [5] Carlitz, L., Permutations in finite fields, Acta sci. math. (Szeged), 24, 196-203, (1963) · [Zbl 0146.06702](#)
- [6] Carlitz, L.; Wells, C., The number of solutions of a special system of equations in a finite field, Acta arith., 12, 77-84, (1966/1967) · [Zbl 0147.04003](#)
- [7] Grandi, A., Un teorema sulla rappresentazione analitica delle sostituzioni sopra un primo di elementi, Giorn. mat. battaglini, 19, 238-245, (1881) · [Zbl 13.0118.02](#)
- [8] Grandi, A., Generalizzazione di un teorema sulla rappresentazione analitica delle sostituzioni, Rend. reale ist. lombardo sci. lett. (2), 16, 101-111, (1883) · [Zbl 15.0116.01](#)
- [9] Helleseth, T.; Zinoviev, V., New Kloosterman sums identities over \mathbb{F}_{2^m} for all m , Finite fields appl., 9, 187-193, (2003) · [Zbl 1081.11077](#)
- [10] Hou, X., Two classes of permutation polynomials over finite fields, J. combin. theory ser. A, 118, 448-454, (2011) · [Zbl 1230.11146](#)
- [11] Lausch, H.; Nöbauer, W., Algebra of polynomials, (1973), North-Holland Amsterdam · [Zbl 0283.12101](#)
- [12] Niederreiter, H.; Robinson, K.H., Complete mappings of finite fields, J. austral. math. soc. ser. A, 33, 197-212, (1982) · [Zbl 0495.12018](#)
- [13] Yuan, J.; Ding, C.; Wang, H.; Pieprzyk, J., Permutation polynomials of the form $(x^p - x + \delta)^s + L(x)$, Finite fields appl., 14, 482-493, (2008) · [Zbl 1211.11136](#)
- [14] Yuan, P.; Ding, C., Permutation polynomials over finite fields from a powerful lemma, Finite fields appl., 17, 560-574, (2011) · [Zbl 1258.11100](#)
- [15] Zha, Z.; Hu, L., Two classes of permutation polynomials over finite fields, Finite fields appl., 18, 4, 781-790, (2012) · [Zbl 1288.11111](#)
- [16] Zeng, X.; Zhu, X.; Hu, L., Two new permutation polynomials with the form $(x^{2^k} + x + \delta)^s + x$ over \mathbb{F}_{2^n} , Appl. algebra engrg. comm. comput., 21, 145-150, (2010) · [Zbl 1215.11116](#)

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