

Generalized Bent Functions

n	d or F(x)	a	d°	Remarks
	2	$a \neq 0$	2	r, wr
2k	$p^k + 1$	$a + a^{p^k} \neq 0$	2	wr
	$p^j + 1, \frac{n}{\gcd(n,j)}$ -odd	$a \neq 0$	2	r, wr
	$p^j + 1$	Some condition on a	2	r, wr
	$\frac{3^k+1}{2}, \gcd(k, n) = 1, k$ -odd	$a \neq 0$	k + 1	r, wr
2k	$t(3^k - 1), \gcd(t, 3^k + 1) = 1$	$K(a^{p^k+1}) = 0$	n	ternary r
2k	$\frac{3^n-1}{4} + 3^k + 1, k$ -odd	$\xi^{\frac{3^k+1}{4}}$	n	ternary wr
4k	$x^{p^{3^k+p^{2k}-p^{k+1}}} + x^2$		$(p-1)k + 2$	wr

The table lists the known univariate polynomials giving infinite classes of p -ary bent functions. Here ξ is a primitive element of \mathbb{F}_{3^n} and the

Here ξ is a primitive element of \mathbb{F}_{3^n} , “r” indicates a regular and “wr” indicates a weakly regular bent function. By $K(a)$ we denote the Kloosterman sum

$$K(a) = \sum_{x \in \mathbb{F}_{p^n}} w^{\text{tr}_n(x+ax^{-1})}$$

where w is a complex p -th primitive root of unity.

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