

Some APN functions CCZ-equivalent to  $x^3 + \text{tr}_n(x^9)$  and CCZ-inequivalent to the Gold functions over  $\mathbb{F}_{2^n}$  (constructed in [1]).

$N$	Functions	Conditions	$d^{\circ}$
1	$x^3 + \text{tr}_n(x^9) + (x^2 + x)\text{tr}_n(x^3 + x^9)$	$n \geq 5$ odd $\gcd(i, n) = 1$	3
2	$x^3 + \text{tr}_n(x^9) + (x^2 + x + 1)\text{tr}_n(x^3)$	$n \geq 4$ even $\gcd(i, n) = 1$	3
3	$\left( x + \text{tr}_n^3(x^6 + x^{12}) + \text{tr}_n(x)\text{tr}_n^3(x^3 + x^{12}) \right)^3 + \text{tr}_n \left( \left( x + \text{tr}_n^3(x^6 + x^{12}) + \text{tr}_n(x)\text{tr}_n^3(x^3 + x^{12}) \right)^9 \right)$	$6 n$ $\gcd(i, n) = 1$	4
4	$\left( x^{\frac{1}{3}} + \text{tr}_n^3(x + x^4) \right)^{-1} + \text{tr}_n \left( \left( \left( x^{\frac{1}{3}} + \text{tr}_n^3(x + x^4) \right)^{-1} \right)^9 \right)$	$3 n$ $n$ odd	4

## References

- [1] Lilya Budaghyan, Claude Carlet, and Gregor Leander. Constructing new apn functions from known ones. *Finite Fields and Their Applications*, 15(2):150–159, 2009.