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On permutation binomials of the form $x^r(x^{q-1} + a)$ over \mathbb{F}_{q^e}

Let \mathbb{F}_q be the finite field of order q . A polynomial $f \in \mathbb{F}_q[x]$ is a permutation polynomial over \mathbb{F}_q if $f(\mathbb{F}_q) = \mathbb{F}_q$. We will present results on permutation binomials of the form $x^r(x^{q-1} + a)$ over \mathbb{F}_{q^e} , where $e \geq 2$ and $a \in \mathbb{F}_{q^e}^*$. This is joint work with Ivelisse Rubio and Javier Santiago.