**Cellular Factor Pair Latin Squares**

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An order-$n$ Latin square is a factor pair Latin square if for each ordered pair $(a, b)$ of positive integers satisfying $ab = n$ there is no repetition of symbols in any $a \times b$ tiling region. When $p$ is prime and $n$ is a natural number, we establish a robust lower bound on the size of a set of pairwise mutually orthogonal factor pair Latin squares of order $p^n$, and likewise for diagonal factor pair Latin squares of order $p^n$. This is accomplished by framing the problem in terms of sets of relatively prime degree-$n$ polynomials in $\mathbf{F}_p[x]$.

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