# On Mutually Nearly Orthogonal Latin Squares

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Two Latin squares $L = [l(i,j)]$ and $M = [m(i,j)]$, of even order $n$ with entries $\{0, 1, 2, \ldots, n-1\}$, are said to be nearly orthogonal if the superimposition of $L$ on $M$ yields an $n \times n$ array $A = [(l(i,j), m(i,j))]$ in which each ordered pair $(x, y)$, $0 \leq x, y \leq n-1$ and $x \neq y$, occurs at least once and the ordered pair $(x, x + n/2)$ occurs exactly twice.

In this talk, I will discuss an upper bound for the maximum $\mu$ for which a set of $\mu$ cyclic mutually orthogonal Latin squares (MNOLS) of order $n$ exists and give the values of $\mu$ for $n \leq 16$. Also, I will present direct constructions for the existence of general families of 3 cyclic MNOLS of some orders and settle the spectrum question for sets of 3 MNOLS of even order, for all but the order 146.

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