1086-VN-998   **Serge C Ballif***, serge.ballif@nsc.edu. *Mutually Orthogonal Latin Squares via Polynomials Modulo n.*

A latin square of order n is an $n \times n$ square where each row and column is a permutation of the same set of n numbers. Two latin squares of the same order are said to be orthogonal if whenever two cells have the same entry in one square, they have distinct entries in the other square. We say that a latin square is a polynomial latin square if the entry in row x and column y is $f(x, y)$ where f is a polynomial in $\mathbb{Z}_n[x, y]$. We extend a result of Rivest by showing that if p is the smallest prime dividing n, there can be at most $p - 1$ pairwise orthogonal polynomial latin squares of order n. (Received September 17, 2012)