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Ian Wanless* (ian.wanless@monash.edu), School of Mathematical Sciences, Monash University, Clayton, Vic 3800, Australia. *A notion of parity for orthogonal Latin squares.*

Parity is a familiar and important notion in the study of permutations. Latin squares are two dimensional permutations and also have some kind of parity. In fact, they have three basic attributes, each of which can be either even or odd. These obey a relationship which means that any two determine the third. So in information theory terms there are really just two parity bits (i.e. 4 possible parities).

What about MOLS (mutually orthogonal Latin squares)? Do they have a notion of parity? In 2012 Glynn and Byatt showed that they do. We reformulate their notion as a natural generalisation of the parity of a Latin square. We then establish an upper bound on the number of parity bits that a set of k MOLS may have. We show that this bound is achieved in infinitely many cases, but never by complete sets of MOLS. We also study the effect of natural MOLS operations on their parity. This leads to the idea of a switching class, which is a set of parities such that if any one parity in the class is achievable, then they all are. (Received September 16, 2015)