Algebra and Number Theory Seminar

Title: Sets of Orthogonal Hypercubes

Speaker: Gary Mullen (Penn. State University)

Date: Mon 31st January 2011 at 4:00PM

Location: Mathematical Sciences Seminar Room

Abstract: As motivation for discussing sets of orthogonal hypercubes, we will first discuss several results concerning sets of orthogonal latin squares. These latin square ideas have earlier been extended to hypercubes of dimension d¿=2. In most of the older work on these topics, orthogonality of cubes and hypercubes was always defined pairwise, as with latin squares. In this talk we will discuss a number of different notions of orthogonality for hypercubes of dimension d¿=2. These new notions of orthogonality not only provide interesting combinatorial objects worthy of study in their own rights, but some of these notions lead to connections to error-correcting codes; for example to MDS codes. No proofs will be presented and so graduate students and mathematically oriented undergraduate students will be able to benefit from the talk.