Quarter Regular Biembeddings of Latin Squares

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(joint work with Mike Grannell and Terry Griggs)

In this talk I will review the concept of the biembedding of two latin squares. Of particular interest will be the *regular biemedding* of two isomorphic copies of the latin square corresponding to the cyclic group of order n, denoted C_n. Grannell and Griggs have shown that, for all n, a regular biembedding exists, and in addition, that the automorphism group of the regular biembedding has order $12n^2$. Grannell and Griggs have also developed a doubling construction in which the latin squares of order n can be used to construct a biembedding of latin squares of order $2n$. In this talk I will apply this construction to the regular biembedding of C_n. The result is surprising in that the doubling construction produces a biembedding of two copies of C_{2n}, however the automorphism group of this biembedding has order $12(2n)^2/4 = 12n^2$.

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