Meeting: 1003, Atlanta, Georgia, SS 24A, AMS Special Session on Design Theory and Graph Theory, I

1003-05-606 **Chris A Rodger*** (rodgec1@auburn.edu), Dept of Mathematics and Statistics, 221 Parker Hall, Auburn University, AL 36849-5310, and **Elizabeth Billington**. *Resolvable 4-cycle group divisible designs with two associate classes.*

Let $K(p, a; \lambda_1, \lambda_2)$ denote the graph formed from p vertex disjoint copies of the multigraph $\lambda_1 K_a$, in which each pair of vertices is joined by exactly λ_1 edges, by joining each pair of vertices in different copies of $\lambda_1 K_a$ with exactly λ_2 edges.

An H-decomposition of a graph G is an ordered pair (V, C), where V is the vertex set of G and C is a set of copies of H such that each edge in G occurs in exactly one graph in C. In an H-decomposition (V, C) of a graph G, a *parallel class* is a subset S of C such that each vertex in V occurs in exactly one copy of H in S. (V, C) is said to be *resolvable* if C can be partitioned into parallel classes.

In this talk the existence problem for resolvable C_4-decompositions of $K(p, a; \lambda_1, \lambda_2)$, or of $K(p, a; \lambda_1, \lambda_2)$ minus a 1-factor, when a is even is discussed. (Received September 24, 2004)