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 $\lambda_1$ edges, by joining each pair of vertices in different copies of $\lambda_1 K_a$ with exactly $\lambda_2$ 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)