

1077-05-2647

Joseph Buchanan* (jmbucha@ilstu.edu), **Ryan C. Bunge**, **Erik Pelttari**, **Greg Rasmuson**,
Alexander Su and **Sevasti Tagaris**. *On d -modular labelings of the union of two cycles.*

For positive integers r and s , let $K_{r \times s}$ denote the complete multipartite graph with r parts of size s each. Let G be a graph with n edges, d be a positive integer such that $d|2n$ and set $c = 2n/d + 1$. A d -modular ρ -labeling of G is a one-to-one function $f : V(G) \rightarrow [0, cd)$ such that

$$\{\min(|f(u) - f(v)|, cd - |f(u) - f(v)|) : \{u, v\} \in E(G)\} = \{1, 2, \dots, \lfloor \frac{cd}{2} \rfloor\} \setminus c\mathbb{Z}.$$

It is known that if a z -partite graph G admits a d -modular ρ -labeling, then there exists a cyclic G -decomposition of $K_{c \times td}$ for every positive integer t such that $\gcd(t, (z - 1)!) = 1$. We investigate d -modular labelings of the union of two vertex-disjoint cycles. (Received September 22, 2011)