

1102-05-269

**Michael W Schroeder\*** (schroederm@marshall.edu), One John Marshall Drive, Huntington, WV 25705. *New Constructions for Symmetric Hamilton Cycle System of Complete Multipartite Graphs.*

In a graph  $G$ , a subgraph  $H$  is *symmetric* with respect to a permutation  $\phi$  of  $V(G)$  if for every  $xy \in E(H)$ ,  $\phi(x)\phi(y) \in E(H)$ . A Hamilton cycle system of  $G$  is symmetric with respect to  $\phi$  if each Hamilton cycle is itself symmetric. In this talk, a classification for the existence of such systems will be presented for complete multi graphs for appropriate permutations  $\phi$  through the use of some new constructions. (Received July 29, 2014)