Abstract

On cyclic symmetric Hamilton cycle decompositions of complete multipartite graphs

Fatima Akinola, University of Florida

A decomposition of a graph with n vertices, labeled by Z_n, is cyclic if addition by 1 to the vertices acts on the decomposition, and the decomposition is d-symmetric for a divisor d of n if addition by n/d to the vertices acts invariantly on the decomposition. In a 2015 paper, Merola et al. established the necessary and sufficient conditions under which a complete multipartite graph with an even number of parts, each with d vertices, has a cyclic Hamilton cycle decomposition; these decompositions were also d-symmetric. In this paper we establish the necessary and sufficient conditions for the analogous question with complete multipartite graphs with an odd number of parts, which settles the existence of cyclic, d-symmetric Hamilton cycle decompositions for all balanced, complete multipartite graphs.