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c7 and C7 Complement Multidecomposition of Kn

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Poster Presentation P31

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If all edges of K_n can be partitioned into copies of a graph G, such design is called a G-decomposition of K_n, or G-design of order *n*. The extension of this design, called multi-decomposition, is decomposition of K_n by a graph pair. For any integer $v \geq 4$, a graph-pair of order v is a pair of non-isomorphic graphs G and *H* of order v such that there are no isolated vertices and $\mathrm{E(G)} \cup \mathrm{E(H)} = \mathrm{E}(K_n)$. A $(G; H)$ −multi-decomposition of K_n is determined when all edges of K_n can be partitioned into copies of G and H with at least a copy of either G or H. In the past, the multi-designs for all graph-pairs of order 4 and 5 have been finished and published in 2003. The necessary and sufficient conditions for the existence of a $(C_6; \overline{C_6}) -$ multi-decomposition of K_n has also been found out by Gao Yizhe. This paper is dedicated to continuing the project by determining the condition for n such that there exists $(C_7, \overline{C_7})$ −multi-decomposition of K_n.

Reference

Abueida, A. A., and Daven, M. Multidesigns for graph-pairs of order 4 and 5. Graphs and Combinatorics, 19(4), (2003) 433-447.