DECOMPOSING THE COMPLETE GRAPH INTO HAMILTONIAN PATHS (CYCLES) AND 3-STARS

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Abstract

Let $H$ be a graph. A decomposition of $H$ is a set of edge-disjoint subgraphs of $H$ whose union is $H$. A Hamiltonian path (respectively, cycle) of $H$ is a path (respectively, cycle) that contains every vertex of $H$ exactly once. A $k$-star, denoted by $S_k$, is a star with $k$ edges. In this paper, we give necessary and sufficient conditions for decomposing the complete graph into $\alpha$ copies of Hamiltonian path (cycle) and $\beta$ copies of $S_3$.

Keywords: decomposition, complete graph, Hamiltonian path, Hamiltonian cycle, star.

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