Multidecompositions of Complete Graphs into a Graph Pair of Order 6

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A pair of graphs $\{G, H\}$ is a *graph pair of order* m if (i) G and H each have order m and no isolated vertices, (ii) G and H are not isomorphic, and (iii) $E(G) \cup E(H) = K_m$. A (G, H)-multidecomposition of order n is a partition of the edges of K_n into copies of G and H with at least one copy of G and at least one copy of H. We provide necessary and sufficient conditions on n for the existence of a (G, H)-multidecomposition of order n in the case where G is a 6-cycle and H is the complement of a 6-cycle.