Decomposition of Complete Graphs Into Certain Unicyclic Bipartite Graphs With 7 Edges

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A graph decomposition into G is done by partitioning a complete graph, K_n, into a set S of subgraphs. Each of these subgraphs of K_n is isomorphic to G such that each edge of K_n belongs to exactly one member of S.
In this talk, we prove that unicyclic bipartite graphs on 7 edges, with 9 or more vertices, containing a single cycle having a length of 4 decompose the complete graphs K_{14k} and K_{14k+1} for all integers $k \geq 1$. We accomplish this using ordered ρ-labelings and 1-rotational ordered ρ-labelings.

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