



13th WORKSHOP
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PROBLEM PRESENTED AT THE WORKSHOP IN KRYNICA 2004

This is a problem by Michael Kubesa, Technical University Ostrava, presented by Dalibor Froncek.

Let K_{2n} be a complete graph and T a tree, both with $2n$ vertices. A T -factorization of K_{2n} is a collection of edge disjoint spanning subgraphs (i.e., factors) T_1, T_2, \dots, T_n of K_{2n} , all isomorphic to T . Every edge of K_{2n} then appears in exactly one copy of T .

M. Kubesa asked the following question: Suppose that there exists a T -factorization of K_{2n} . Is it then true that the vertex set of T can be decomposed into two subsets, X and Y , such that

- (1) $|X| = |Y| = n$,
- (2) $\sum_{x \in X} \deg(x) = \sum_{y \in Y} \deg(y)$?

Notice that the sets X, Y in general are *not* the partite sets of the bipartition of T .