On Graph – Factorizations

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Abstract

Graphs are important objects both in theoretical studies and in practical applications to represent pairwise relations. One problem of study in the area is to try to decompose the graph into copies of a given smaller graphs. These graph decomposition problems use the tools of both graph theory and combinatorial design theory. Among graph decomposition problems, cycle decomposition is an interesting and well-studied one. Especially, requirement of having parallel classes for a resolvable decomposition adds a good flavor and difficulty to the problem. The well-known resolvable cycle decomposition (a.k.a 2-factorization) problems are the Oberwolfach and the Hamilton-Waterloo problems. Here I will talk about these problems, their generalizations and give a few interesting constructions. I will also mention a few interesting topics I currently work on.