

On the Structure of 2-Factors

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A 2-factor is a 2-regular subgraph that spans the vertex set of a graph, that is, it is the union of disjoint cycles that cover the vertices of the graph. We shall discuss problems of the form: what conditions allow us to specify completely the structure of a 2-factor? That is, when can we control the number and size of the cycles? Several recent results of this form will be discussed. As we should expect, such control comes at the price of very strong conditions.

We shall also consider a relaxation of the above problem to: when can we control the number of cycles in the two factor? Here much weaker conditions will suffice. Several such results will be discussed. These are all of the form of generalizations of classic hamiltonian results.

Similar questions for digraphs will also be discussed.