MATEJA SAJNA, University of Ottawa

Bipartite 2-factorizations of complete multigraphs via layering

Layering is in principle a simple method that allows us to obtain a type-specific 2-factorization of a complete multigraph (or complete multigraph minus a 1-factor) from existing 2-factorizations of complete multigraphs and complete multigraphs minus a 1-factor. This technique is particularly effective when constructing bipartite 2-factorizations; that is, 2-factorizations with all cycles of even length.

In this talk, we shall give a thorough introduction to layering, and then describe new bipartite 2-factorizations of complete multigraphs obtained by layering. In particular, for complete multigraphs and bipartite 2-factors with no 2-cycles, we obtain a complete solution to the Oberwolfach Problem and an almost complete solution to the Hamilton-Waterloo Problem.

This is joint work with Amin Bahmanian.