

The golden jubilee of the Oberwolfach problem

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The year 2017 marked the fiftieth anniversary of the Oberwolfach problem, originally stated by Gerhard Ringel at a graph theory conference in Oberwolfach, Germany. It asks if it is possible to seat v people for a series of meals at t round tables which can accommodate $\ell_1, \ell_2, \dots, \ell_t$ guests so that each person sits next to each other person exactly once. This problem can be seen as an instance of a more general graph factorization problem: given s distinct 2-regular graphs F_1, F_2, \dots, F_s of order v , and s positive integers $\alpha_1, \alpha_2, \dots, \alpha_s$, can we decompose the complete graph K_v into α_1 copies of F_1 , α_2 copies of F_2 , and so on? The Oberwolfach problem coincides with the case $s = 1$, with the lengths of the cycles in F_1 being the sizes of each table.

In this talk, I will survey the most recent results on this subject and describe some of the techniques that has allowed significant progress to be made on a problem that is still open.

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