

On the mini-symposium problem

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The Oberwolfach problem was originally stated as a seating problem:

Given v attendees at a conference with t circular tables each of which seats a_i people ($\sum_{i=1}^t a_i = v$). Find a seating arrangement so that every person sits next to each other person around a table exactly once over the r days of the conference.

The Oberwolfach problem thus asks for a decomposition of K_n ($K_n - I$ when n is even) into 2-factors consisting of cycles with lengths a_1, \dots, a_t .

In this talk we introduce the related *mini-symposium problem*, which asks for solutions to the Oberwolfach problem on v points which contains a subsystem on m points. In the seating context above, the larger conference contains a mini-symposium of m participants, and we also require these m participants to be seated together for $\lfloor \frac{m-1}{2} \rfloor$ of the days.

We obtain a complete solution when the cycle sizes are as large as possible, i.e. m and $v-m$. In addition, we provide extensive results in the case where all cycle lengths are equal, of size k say, completely solving all cases when $m \mid v$, except possibly when k is odd and v is even. In particular, we completely solve the case when all cycles are of length m ($k = m$).