On the mini-symposium problem

Peter Danziger

Ryerson University
danziger@ryerson.ca

Joint work with E. Mendelsohn, B. Stevens, T. Traetta.

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 \( \left( \sum_{i=1}^t a_i = v \right) \). 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 \( a_1, \ldots, a_t \).

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 \( m \) \( (k = m) \).