
MASOOMEH AKBARI, University of Ottawa

The Generalized Honeymoon Oberwolfach Problem with one large table of size $2m$

The Honeymoon Oberwolfach Problem (HOP), introduced by Šajna, is a recent variant of the classic Oberwolfach Problem. This problem asks whether it is possible to seat $2m_1 + 2m_2 + \dots + 2m_t = 2n$ participants, consisting of n newlywed couples, at t round tables of sizes $2m_1, 2m_2, \dots, 2m_t$ for $2n - 2$ successive nights so that each participant sits next to their spouse each night and next to each other participant exactly once. HOP has been studied by Jerade, Lepine, and Šajna, with some significant cases already solved.

We generalize HOP by allowing tables of size two, rather than a minimum size of four as previously defined in HOP. Thus, in the generalized HOP, we aim to seat the $2n$ participants at s tables of size 2 and t round tables of sizes $2m_1, 2m_2, \dots, 2m_t$, with the requirement that $2n = 2s + 2m_1 + 2m_2 + \dots + 2m_t$ and $m_i \geq 2$. Our current goal is to prove that the necessary condition for the HOP with s tables of size 2 and one large table of size $2m$ to have a solution is sufficient. In this talk, we will present a general approach to this problem and discuss the progress we have made so far.