Mathematics Seminar

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Thursday, May 5, 2016
2:00-3:00 pm in HH-3017

On 2-factorizations of the complete graph: A mathematical journey through Oberwolfach, Hamilton and Waterloo)

Abstract:

In the 1960s, Ringel posed the following problem, known as the *Oberwolfach problem*. At a conference in Oberwolfach, Germany, attended by n mathematicians, the dining room has round tables of sizes k_1, k_2, $\ldots$, k_t, where $k_1 + k_2 + \cdots + k_t = n$. Is it possible, over the r nights of the conference, for each person to sit next to each other person exactly once? In other words, given a 2-factor $\mathcal{F}$ consisting of cycles of lengths k_1, k_2, $\ldots$, k_t, does there exist a 2-factorization of the complete graph K_n in which each 2-factor is isomorphic to $\mathcal{F}$?

Several variations of the Oberwolfach problem have since been studied, among the most notable being the *Hamilton-Waterloo problem*. In this version, the conference has two venues (Hamilton and Waterloo), so we seek to find a 2-factorization of K_n with α factors isomorphic to $\mathcal{F}_1$ and β isomorphic to $\mathcal{F}_2$.

In this talk, we give an overview of these problems, and present some recent results on the Hamilton-Waterloo problem for uniform odd-cycle factors.