

DISCRETE MATHEMATICS SEMINAR

Department of Mathematics

State University of West Georgia

3:30 PM, WEDNESDAY OCTOBER 6, 2004, BOYD 301

Speaker: Dr. Abdollah Khodkar, UWG

Title: **On a generalization of the Oberwolfach Problem I**

Abstract

One of the best-known problems on factorizations into cycles is the Oberwolfach problem, which was first formulated by Ringel and concerns possible seating arrangements as discussed at a graph theory conference in Oberwolfach, Germany in 1967. The question is if it is possible to seat an odd number m of people at t round tables at which there are a_1, a_2, \dots, a_t seats (with $a_1 + a_2 + \dots + a_t = m$ and $a_i \geq 3$) on $(m-1)/2$ days so that each person sits next to every other person exactly once. Thus the Oberwolfach problem asks for a 2-factorization of the complete graph K_m in which each 2-factor consists of cycles of lengths a_1, a_2, \dots, a_t .

In this talk, we study the case $m = p^n$, where p is an odd prime. Clearly, if K_{p^n} has a C_t -factor, then t must also be a power of p , say $t = p^k$ with $1 \leq k \leq n$. In particular, we show that if e_1, e_2, \dots, e_n is a sequence of nonnegative integers such that the first non-zero term is not one and $\sum_{i=1}^n e_i = (p^n - 1)/2$, then the complete graph K_{p^n} can be decomposed into e_1 C_{p^n} -factors, e_2 $C_{p^{n-1}}$ -factors, \dots , and e_n C_p -factors.

All faculty and students are welcome.