

THE MATHEMATICS DEPARTMENT PRESENTS

# A MATHEMATICS COLLOQUIUM

THURSDAY, May 7, 2009

BOND HALL 217

4:00 pm

**Title: Schnirelmann Density and Manns Theorem**

**Speaker: Joe White**, Western Washington University

**Abstract:**

The density of a set of non-negative integers is a measure of what proportion of the natural numbers are contained in that set. For a given set of non-negative integers, a sequence of ratios related to the set can be formed, and the density of the set can be defined in terms of this sequence. One definition, known as natural density, considers the limit of the sequence of ratios; another, developed by L. G. Schnirelmann and known as Schnirelmann density, considers the infimum or greatest lower bound of the ratios. While the natural density makes intuitive sense, the Schnirelmann density is useful when looking at sums of sets of non-negative integers, and led to the theorem of Henry Mann, which says that the Schnirelmann density of the sum of two such sets is not less than the minimum of the sum of their densities and 1. This talk will discuss some examples of sets of non-negative integers and their natural and Schnirelmann densities, some of the history behind Manns Theorem and an outline of its proof, and a proof of the theorem in a special case.

Refreshments will precede the talk at 3:30pm in Bond Hall 300  
courtesy of Dr. Robert Jewett