Department of Mathematics and Statistics Colloquium

The Lecture Hall Theorem via Abacus Diagrams

Brant Jones, James Madison University

Abstract: A beautiful result of Euler asserts that the number of ways to write a given positive number as a sum of odd integers is the same as the number of ways to write that number using distinct integers. For example,

$$\begin{aligned} 6 &= 1+1+1+1+1+1 & 6 &= 3+2+1 \\ 6 &= 3+1+1+1 & 6 &= 4+2 \\ 6 &= 3+3 & 6 &= 5+1 \\ 6 &= 5+1 & 6 &= 6. \end{aligned}$$

The Lecture Hall Theorem is a recent generalization of this result from the late 1990's due to Bousquet-Mélou and Eriksson that has given rise to some fascinating combinatorics. In this talk, we give a new proof of the Lecture Hall Theorem and explore some connections to a certain group generated by affine reflections.

This is joint work completed during last summer's REU at JMU with Lara Bradford, Meredith Harris, Alex Komarinski, Carly Matson, and Edwin O'Shea.

Monday, April 1st at 3:45 in Roop 103

refreshments at 3:30