

1033-05-2

**Carla D. Savage\***, North Carolina State University. *The mathematics of lecture hall partitions.*

Lecture hall partitions are integer solutions  $(x_1, \dots, x_n)$  to the system of inequalities  $x_1/n \geq x_2/(n-1) \geq \dots \geq x_n/n \geq 0$ . They were introduced in 1997 by Bousquet-Mélou and Eriksson who used them to prove a finite version of a famous partition theorem of Euler. Since then, several generalizations and refinements have been discovered. In this talk we examine lecture hall partitions from a variety of perspectives to reveal their surprisingly rich structure and uncover new connections in geometry,  $q$ -series, partition theory, number theory, and the elementary combinatorics of linear recurrences. (Received September 13, 2006)