

CCSU  
DEPARTMENT OF MATHEMATICAL SCIENCES

# COLLOQUIUM

Friday, March 2  
2:00 – 3:00 PM  
Maria Sanford, Room 101

## ***SET THEORY: THE ARITHMETIC OF INFINITE CARDINALS***

**W. W. COMFORT**

WESLEYAN UNIVERSITY

### **ABSTRACT**

Formulas valid for finite cardinals often have analogues which are false for infinite cardinals. For example, one has  $a + a = a^2 = a$ ; there are  $a, b, c$ , and  $d$  such that  $a < b$ ,  $c < d$ , and  $a^c = b^d$ ; etc. In this talk the surprising theorem of König and Zermelo will be proved: If  $I$  is an index set and  $a_i < b_i$  for each  $i \in I$ , then  $\sum_{i \in I} a_i < \prod_{i \in I} b_i$ . Some consequences, familiar and unfamiliar, will be cited, including the fact that  $c$  is not equal to  $\aleph_\omega$ . According to Easton's Theorem, the König-Zermelo Theorem is the only obstruction governing cardinal exponentiation for regular cardinals. In particular, the Continuum Hypothesis may be either true or false.

This talk will be suitable for motivated undergraduate and graduate students.

***For further information:***  
[gotchevi@ccsu.edu](mailto:gotchevi@ccsu.edu) 860-832-2839