

DEPARTMENT OF MATHEMATICS AND STATISTICS

MISSISSIPPI STATE UNIVERSITY

COLLOQUIUM

Interval Partitions and Stanley Depth

MITCHEL T. KELLER

Department of Mathematics
London School of Economics & Political Science

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Allen 14

Abstract. This talk will explore a connection between the combinatorics of partially ordered sets (posets) and commutative algebra. In 1982, Richard Stanley introduced the concept of what is now known as the Stanley depth of a module over a commutative ring. He also conjectured that a module's Stanley depth is always greater than or equal to its depth. Some cases of Stanley's conjecture have been resolved using algebraic techniques over the years, but the conjecture remains largely open. In a 2009 paper, Herzog, Vladoiu, and Zheng introduced a combinatorial approach to the problem. They established a connection between Stanley decompositions (the structures used to determine Stanley depth) of monomial ideals and partitions of finite posets associated to those ideals into intervals $[A, B] = \{C: A \subseteq C \subseteq B\}$. This connection has led not only to additional results on Stanley depth but also to interesting and elegant combinatorics. This talk will explore some of the combinatorics involved in the research, with the algebraic question discussed to provide the motivation and ideas for ongoing research. This talk contains joint work (in various combinations) with Csaba Biro, David M. Howard, Yi-Huang Shen, Noah Streib, William T. Trotter, and Stephen J. Young.

There will be a reception for Dr. Keller at 3:00 in Allen 467.

Contact Bruce Ebanks, ebanks@math.msstate.edu or (662) 325-7160, for additional information.