

1030-05-198

Jozsef Beck (jbeck@math.rutgers.edu), Department of Mathematics, Rutgers University, Piscataway, NJ 08854, **Wesley Pegden** (pegden@math.rutgers.edu), Department of Mathematics, Rutgers University, Piscataway, NJ 08854, and **Sujith Vijay*** (sujith@math.rutgers.edu), Department of Mathematics, University of Illinois at Urbana-Champaign, Urbana, IL 61801. *The Hales-Jewett Number and Hypercube Tic-tac-toe.*

In 1963, A.W. Hales and R.I. Jewett proved that for every positive integer n , there exists a dimension $d = HJ(n)$ such that any 2-coloring of the cells of the n^d hypercube admits a monochromatic line. This followed from their stronger result, namely the existence of a dimension $D = HJ'(n)$ such that any 2-coloring of the cells of the n^D -hypercube admits a monochromatic combinatorial line.

Hales and Jewett also showed that $HJ(n) \geq n$. We improve this to an exponential lower bound, adapting a well-known argument that establishes an exponential lower bound on $HJ'(n)$. In this talk, the proof will be outlined and connections with hypercube tic-tac-toe will be discussed. (Received August 02, 2007)