

1081-05-74

Tai Hà, Erik Stokes and **Fabrizio Zanello*** (zanello@math.mit.edu), Department of Mathematics, Michigan Tech, Houghton, MI 49931. *On Stanley's matroid h -vector conjecture.*

A horrendously difficult 1977 conjecture of Richard Stanley's simply states that all matroid h -vectors are pure O -sequences. In this talk, I will describe a new and more abstract approach, developed in collaboration with T. Hà (Tulane) and E. Stokes (NSA), whose goal is to translate a substantial portion of the problem into one on the structural properties of pure O -sequences. We will rely in part on the recent progress on pure O -sequences, and will not need to construct explicitly a pure monomial order ideal for each given matroid h -vector, as often done in the past.

Using this approach and the Interval Property for socle degree 3 pure O -sequences (proved by M. Boij, J. Migliore, R. Miró-Roig, U. Nagel and myself in an upcoming AMS Memoir), I will outline a solution to Stanley's conjecture for matroids of rank at most 3. I will wrap up the talk discussing a possible approach to the general case of the conjecture. (Received January 30, 2012)