

1073-05-35

Tai Há, Erik Stokes and **Fabrizio Zanello*** (zanello@math.mit.edu), Department of Mathematics, MIT, Office 2-336, Cambridge, MA 02139. *Stanley's matroid h -vector conjecture in low rank.*

A much-studied conjecture of Richard Stanley's predicts that all matroid h -vectors are pure O -sequences. I will describe a possible new, and in a sense more abstract, approach to it. Its main object is to translate a substantial portion of the problem into one on the structural properties of pure O -sequences. This approach in part relies on the recent progress on pure O -sequences, and does not need to construct explicitly a pure monomial order ideal for each given matroid h -vector, as often done in the past.

Using the Interval Property for pure O -sequences of socle degree 3 (recently proved by M. Boij, J. Migliore, R. Miró-Roig, U. Nagel and myself as part of an upcoming AMS Memoir), I will outline a solution to Stanley's conjecture for matroids of rank at most 3. I will conclude with some possible suggestions for future research in this direction.

All the material I will discuss in this talk comes from a joint work with T. Há and E. Stokes (available on the arXiv as preprint 1006.0325, or upon request). (Received July 17, 2011)