

1092-13-79

Fabrizio Zanello* (zanello@math.mit.edu), Department of Mathematics, Office 2-330, MIT, Cambridge, MA 02139-4307. *Some recent developments on the Interval Property.*

We discuss some recent results concerning the Interval Property (IP). A set S of integer sequences is said to have the IP if, for $h, h' \in S$ coinciding in all entries but one, say $h = (h_0, \dots, h_{i-1}, h_i, h_{i+1}, \dots)$ and $h' = (h_0, \dots, h_{i-1}, h_i + a, h_{i+1}, \dots)$ for some $a \geq 1$, we have $(h_0, \dots, h_{i-1}, h_i + b, h_{i+1}, \dots)$ also in S , for $b = 1, 2, \dots, a - 1$.

The IP holds for many sequences of interest in combinatorial algebra and combinatorics, and has recently been studied in several new contexts. These include the Hilbert functions of level and Gorenstein algebras, where I first conjectured the IP and it is still wide open (J. Algebra, 2009); and pure O -sequences (the “BMMNZ” AMS Memoir, 2012). For these latter, it proved to be a helpful tool to solve Stanley’s matroid h -vector conjecture in rank 3 (joint work with T. Hà and E. Stokes; Annals of Comb., 2013), and then it was disproved in large socle degree (Constantinescu-Varbaro, preprint).

In this talk, I show that the Interval Property fails in general for pure f -vectors (joint with A. Pastine; Proc. AMS, 2013), and for r -differential posets when r is large (joint with R. Stanley; E-JC, 2012), though some initial data suggests it might hold for the main class of 1-differential posets. (Received July 29, 2013)