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**Ben Richert\*** (brichert@calpoly.edu), Mathematics Department, Cal Poly, San Luis Obispo, San Luis Obispo, CA 93407, and **Michael Mogull, Sam Saiki** and **David jansson**. *The poset tree of graded Betti numbers for a fixed Hilbert function and the degree to height function*. Preliminary report.

Given a homogeneous ideal  $I$  in a polynomial ring  $R = k[x_1, \dots, x_n]$ , the degree to height function of  $I$  in degree  $d$  is defined to be the height of  $I_{\leq d}$ . This invariant is conjectured to identify unique maximal elements in subtrees of the poset tree of ideals in  $R$  whose quotients have a fixed Hilbert function. It has been asked whether the degree to height function can guarantee the existence of unique minimal elements in these same subtrees. By restricting to squarefree monomial ideals we discovered that this need not be the case. We also identified instances for which unique maximal elements need not exist among the resolutions of squarefree monomial ideals with given degree to height and Hilbert functions (showing that one possible extension of the lex-plus-powers conjecture to the squarefree monomial case does not hold), and instances in which the subtrees have holes. (Received January 27, 2010)