

1089-14-217

Grigoriy Blekherman and **Gregory G. Smith*** (ggsmith@mast.queensu.ca), Department of Mathematics & Statistics, Jeffery Hall, Queen's University, Kingston, Ontario K7L3N6, Canada, and **Mauricio Velasco**. *Nonnegative sections and sums of squares*. Preliminary report.

A polynomial with real coefficients is nonnegative if it takes on only nonnegative values. For example, any sum of squares is obviously nonnegative. For a homogeneous polynomial with respect to the standard grading, Hilbert famously characterized when the converse statement hold, i.e. when every nonnegative homogeneous polynomial is a sum of squares. In this talk, we will examine this converse for homogenous polynomials with respect to a positive multigrading (or more generally global sections of a line bundle). In particular, we will provide many new examples in which every nonnegative homogeneous polynomial is a sum of squares. (Received February 15, 2013)