

DEGREE BOUNDS IN RATIONAL SUMS OF SQUARES REPRESENTATIONS ON CURVES

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Let X be a curve with dense real points. It is well-known that any polynomial p nonnegative on X can be written as a sum of squares of rational functions in the coordinate ring of X . I will present new degree bounds for these rational sums of squares representations, which depend on the Hilbert series of X only. The bound can be shown to be tight in many instances. It is an open question whether the bound is tight for any curve X with dense real points.

Joint work with Greg Smith (Queens University) and Mauricio Velasco (Universidad de los Andes).