1158-30-269 **Andrzej Piotrowski***, 11066 Auke Lake Way, Dept. of Natural Sciences, M/S SOB1, Juneau, AK 99801. *Quantifying Real Zeros of Polynomials via Curve Theorems.* Preliminary report.

In some cases, the real zeros of a polynomial (or a sequence of polynomials) can be ascertained as the intersection of a particular curve with a related real algebraic variety. In 1916, G. Pólya proved a result along these lines and provided a geometric link between the Hermite-Poulain Theorem, Schur's Theorem, and the transcendental characterization of multiplier sequences. In 2007, the author strengthened a result of G. Pólya's to obtain the first characterization of multiplier sequences for Hermite expansions of polynomials. The overarching ideas behind this curve theorem and its applications will be given, along with some conjectures on how to further extend G. Pólya's result. In addition, we will discuss how intersecting curves can be used to re-prove a result of K. Tran, which demonstrates that the zeros of the polynomials H_k must all be real, where the polynomials H_k are defined by $1/(P(t)+zt^r) = \sum H_k(z)t^k$ for some quadratic polynomial P and $r \in \{1, 2\}$. Furthermore, our approach will show that the zeros of H_k and H_{k+1} are interlacing for all k. The latter result came about as part of a collaboration with D. A. Cardon and T. Forgács. (Received March 02, 2020)