1087-11-74 **Thai Hoang Le*** (leth@math.utexas.edu) and **Craig Spencer**. *Intersective polynomials and Diophantine approximation.*

It has been known since Vinogradov that for each k, there is an exponent $\theta = \theta(k)$ such that for every positive integer N and real number α, we have $\min_{1\leq n\leq N} \|\alpha n^k\| \ll N^{-\theta}$, the bound being uniform in α and N (where $\|\cdot\|$ denotes the distance to the nearest integer). More generally, there is an exponent $\theta = \theta(k,l)$ such that for any polynomials $f_1, \ldots, f_l$ of degree at most k and with zero constant terms, we have $\min_{1\leq n\leq N} \|\max_{1\leq i\leq l} f_i(n)\| \ll N^{-\theta}$, the bound being uniform in the coefficients of $f_1, \ldots, f_l$. Much effort has been put in finding best possible exponents. In joint work with Craig Spencer, we generalize further the above results, replacing each monomial n^k by a polynomial in $\mathbf{Z}[x]$. It turns out that the only obstructions to the above inequalities are of local nature. (Received November 27, 2012)