1046-11-1738 **Doug Hensley*** (dhensley@math.tamu.edu), Dept Math, TAMU, mail stop 3368, College Station, TX 77840. *Polynomials that take small values at an algebraic integer.* Preliminary report.

The continued fraction expansion of $\sqrt{2}$ gives a sequence of rational approximations (p_n/q_n) to $\sqrt{2}$. But we can also look at it this way: we get a sequence of integer vectors (p_n, q_n) that are exceptionally close to being perpendicular to $(1, -\sqrt{2})$. What happens if we look for integer vectors $b = (b_0, \ldots, b_{n-1})$ exceptionally close to being perpendicular to $(1, \alpha, \ldots, \alpha^{n-1})$, when α is an algebraic integer of degree n?

If we call suitable lists b of integers *good*, we can then ask how we might find good b and what they are like. We can find them computationally by way of a lattice reduction trick. We can find them via number theory, because they have a special structure: the associated algebraic integer $\beta = \sum b_k \alpha^k$ has small *norm*, and apart from β itself, the algebraic conjugates of β have comparable absolute values.

We can also say where to find them: The *scaled coefficient lists* $|\beta|^{1/(n-1)} b$ associated with b sit very nearly on one of a finite number of surfaces λS in $\mathbb{R}^n$, where S is a hyperboloid(*) that depends on α. (Received September 16, 2008)