1046-11-2071 **Kiryl I Tsishchanka*** (`ktsishch@depaul.edu`), Department of Mathematical Sciences, DePaul University, 2320 North Kenmore Ave., Chicago, IL 60614. *On integer polynomials that are small at a given cubic irrational.*

Lagrange proved that the regular continued fraction of a real number ξ is periodic if and only if ξ is quadratic. Moreover, it is known that if $\xi = [0, \overline{a}]$, then

$$\lim_{i\to\infty} |q_i\xi - p_i|\, q_i = 1/\sqrt{D},$$

where D is discriminant of ξ and p_i/q_i is its ith convergent. In the first part of this talk we will discuss a generalization of this statement to the case $\xi = [0, \overline{a_1, \ldots, a_k}], k > 1$.

Now let ξ be a cubic irrational. In the second part of the talk we will present a simple and fast algorithm to construct integer polynomials P_i of degree ≤ 2 such that $|P_i(\xi)|$ are small at ξ. There is another property of the sequence P_i which is of particular interest. Put $K_i^{(2)} = |P_i(\xi)|\|P_i\|_2^2$, where $\|\cdot\|_2$ is the ℓ^2-polynomial norm. We will show that there is a connection between $K_i^{(2)}$ and the beta distribution. (Received September 17, 2008)