Pure Mathematics Seminar

Mathematical quasicrystals and associated measures

Dr. Alexey Garber
SMSS, UTRGV

Though there is no universal agreed upon mathematical model for physical quasicrystals, cut-and-project sets as defined below are considered to comprise one of the common models representing some properties required for quasicrystals. In particular, one of the major necessary properties is the existence of a certain diffraction picture is observed for cut-and-project sets.

A cut-and-project set X in $\mathbb{R}^d$ can be constructed (in a simplest case) as a projection of points of a $(d+n)$-dimensional lattice Λ in a certain neighborhood, called *window* W, of n-dimensional space onto $\mathbb{R}^d$.

One of the ways to construct a measure μ_X associated with X is taking the Dirac comb associated with the set . In that case if the window of the cut and project set X is a projection of a fundamental cell of Λ, then the measure μ_X will be close to a uniform measure in a certain sense. This is almost

In this talk we will discuss how we can construct a measure associated with a cut-and-project set using a function supported by the window W. In particularly we will sketch proof that in case $d = n = 1$ any window and any piecewise linear or twice differentiable function with bounded second derivative will define a measure close to a uniform measure.

The talks is based on a joint work with Dirk Frettlöh (Bielefeld University).

Date: **Wednesday, October 24, 2018**
Time: **12:15 pm**
Place: **Edinburg:** EMAGC 1.410, **Brownsville:** BLIBR 2.206

The talk will delivered live at the *Brownsville* campus and will be streamed to the Edinburg campus

Coffee might be served.

For further information or for special accommodations, please contact Dr. Sergey Grigorian via email at [sergey.grigorian@utrgv.edu], or Dr. Alexey Garber at [alexey.garber@utrgv.edu], or visit the webpage http://www.utrgv.edu/math/news-events/seminars/puremath/index.htm