

Department Colloquium



Monday, May 7th, 2018
10:00 am - 10:50 am in Hume 321

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Repetitivity of patterns in mathematical quasicrystals

ABSTRACT

In this talk we will begin with a brief history of the mathematics of aperiodic tilings of Euclidean space, highlighting their relevance to the theory of physical materials called quasicrystals. Next we will focus on an important collection of point sets, cut and project sets, which provide us with mathematical models for quasicrystals. Cut and project sets have a dynamical description, in terms of return times to certain regions of linear \mathbf{R}^d actions on higher dimensional tori. As an example of the utility of this point of view, we will demonstrate how it can be used, in conjunction with input from Diophantine approximation, to classify a subset of ‘perfectly ordered’ quasicrystals.