

1116-52-1013

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Characterization of perfectly ordered mathematical quasicrystals.

In this talk we will explain a duality between the problems of understanding patterns in cut and project sets, which are mathematical models for quasicrystals, and understanding the dynamics of certain linear actions on the internal spaces which define them. We will show how this point of view can be used to give a simple characterization of the collection of linearly repetitive cut and project sets (models for perfectly ordered quasicrystals), answering a question of Lagarias and Pleasants. (Received September 16, 2015)