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SEMINARIO SISTEMAS DINÁMICOS DE SANTIAGO

TIME (Mon 1st Apr) 4:30 pm - 5:30 pm

LOCATION CMM

SPEAKER Angel Pardo (CMM, Universidad de Chile)

TITLE Counting problem on infinite periodic billiards and translation surfaces

ABSTRACT

The Gauss circle problem consists in counting the number of integer points of bounded length in the plane. This problem is equivalent to counting the number of closed geodesics of bounded length on a flat two dimensional torus or, periodic trajectories, in a square billiard table.
Many counting problems in dynamical systems have been inspired by this problem. For 30 years, the experts try to understand the asymptotic behavior of closed geodesics in translation surfaces and periodic trajectories on rational billiards. (Polygonal billiards yield translation surfaces naturally through an unfolding procedure.) H. Masur proved that this number has quadratic growth rate.
In these talk, we will study the counting problem on infinite periodic rational billiards and translation surfaces.

The first example and motivation is the wind-tree model, a Z^2-periodic billiard model. In the classical setting, we place identical rectangular obstacles in the plane at each integer point; we play billiard on the complement.

I will first present some quite precise results that are only valid for the wind-tree model (and some natural generalizations) and then, a general result which is valid for a.e. infinite periodic translation surfaces that uses completely different techniques: a dynamical analogous, for the algebraic hull of a cocycle, to strong and super-strong approximation on algebraic groups.

Esperando contar con su presencia, les saluda,

Ma. Inés Rivera

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