

Dynamical Systems Seminar

Date. October 24th, 14h30 (Friday)

Place. Room FC1.031

Speaker. Mark Pollicott (Warwick University)

Title. Horocycles, shrinking targets and Extremal theory

Abstract.

There is a rich theory in dynamical systems involving the study of “shrinking targets”. Given an ergodic probability measure the famous Birkhoff ergodic theorem shows that typically for every point x the orbit $(T^n x)$ enters a ball of fixed radius (a “target”) infinitely often. However, if we allow the radius of the ball to shrink as n increases (a “shrinking target”) then we can ask about the size of the set of x whose orbits still enter these sets infinitely often. Extremal theory helps to quantify this behaviour. Many of the classical examples involve hyperbolic maps T . However, horocycle flows are a very simple class of (non-hyperbolic) dynamical systems that also give a gentle insight into the world of homogeneous dynamics. Somewhat surprisingly analogous extremal theory results can be shown in this context, via a remarkably simple argument. No prior knowledge of these topics will be assumed and this will be a blackboard talk.

This is joint work with J. Marklof (Bristol)

There will be a coffee break after the seminar.