

Dynamical Systems Seminar

Date. October 21st, 14h30 (Friday) **Unusual day**

Place. Room FC1.029 **Unusual place**

Speaker. Mike Todd (University of St Andrews)

Title. Pair correlations in dynamical systems

Abstract.

Questions about how “random” or “deterministic” a sequence is appear in many areas of mathematics. For real-valued sequences, this can be formulated in terms of how well distributed points are in the real line, or in an interval. More detailed information can be found if we look at the gaps between pairs of points in finite segments of such sequences. If these are sufficiently random then the mean gap data converges in a natural way, and the sequence has “Poisson pair correlations” (PPC) introduced by Rudnick and Sarnak. There is a rich literature on such gaps of pairs in sequences studied in number theory: for example the sequence $(\alpha n)_n$ for α irrational is equidistributed modulo 1 for any irrational α , but does not have PPC.

Recently there has been a lot of activity in the study of the gaps between elements in finite orbit segments of dynamical systems, though until now the main question has been about the minimum gap between pairs. Here we consider the mean distance, proving that PPC holds for a natural class of interval maps. This is joint work with Simon Baker.

There will be a coffee break after the seminar.