



15 February, 2019

Mathematics Colloquium

- Speaker : *Arnaldo Nogueira*
Affiliation : *Institut de Mathématiques de Marseille, France*
Title : *Dynamics of 2-interval piecewise linear contraction maps and Hecke-Mahler series*
Date & Time : *Thursday, 21 February, 2019 at 04.00 p.m.*
Venue : *Lecture Room (AG-69)*

Abstract

Let $I = [0, 1)$ be the unity interval. Let $0 < a < 1$ and $0 < b < 1$ with $a + b > 1$. Let $f = f_{a,b} : x \in I \mapsto ax + b \pmod{1}$. Once the parameter a is fixed, we are interested in the family $f_{a,b}$, where b runs on the interval I . We use the fact that, as in the case of circle homeomorphisms, any map $f_{a,b}$ has a rotation number which depends only on the parameters a et b . We will discuss the dynamical and diophantine aspects of the subject. In particular, we will show that, if a and b are algebraic numbers, the rotation number is rational using a transcendence theorem about the value of the Hecke-Mahler series at an algebraic point. If we have time, we will discuss other cases of 2-interval piecewise linear contractions which have the same property.

(The talk is based on a joint work with Michel Laurent.)

Milind Pilankar