

## Dynamical Systems Seminar

**Date.** July 13, 14h30

**Place.** Room M031

**Speaker.** Paulo Varandas<sup>1</sup> (Universidade Federal da Bahia, Brazil)

**Title.** Ergodic properties of generalized Viana maps

**Abstract.** We study quadratic skew-products  $\varphi_\alpha(\theta, x) = (g(\theta), f_\alpha(\theta, x))$  with  $g$  piecewise expanding Markov interval map with countable many branches, and  $f_\alpha(\theta, x) = a_0 + \alpha \sin(2\pi\theta) - x^2$ , a generalization of the class of maps introduced by Viana. We prove that if the parameter  $a_0$  is Misiurewicz for  $h(x) = a_0 - x^2$ , then generic perturbations of  $\varphi$  admit the coexistence of a dense subset of points with negative central Lyapunov exponent together with a full Lebesgue measure subset of points which have positive Lyapunov exponents in all directions; in particular there is a unique SRB measure, it is absolutely continuous w.r.t. Lebesgue and supported in a non-uniformly expanding set. Moreover, if the parameter  $a_0$  is hyperbolic for  $h(x) = a_0 - x^2$  we show that there exists a unique SRB measure  $\nu$ , it has one positive and one negative Lyapunov exponents, and the complement of the basin of attraction  $B(\nu)$  is an expanding Cantor set of lines.

**Remark.** Coffee with the speaker is served after the talk (15h30 - 16h00)

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<sup>1</sup>Paulo Varandas is currently Assistant Professor of Mathematics at Universidade Federal da Bahia (Brazil). He graduated in Pure Mathematics at University of Porto in 2002 and he did his Ph.D. under the supervision of Marcelo Viana at IMPA (Brazil), in 2007. After that he had a post-doc position at UFRJ (2008) and since then he has been involved in several research projects in the area of Dynamical Systems. His main research interests are Ergodic Theory, equilibrium states and thermodynamic formalism, non-uniform hyperbolicity and decay of correlations. Paulo's homepage is <http://www.pgmat.ufba.br/varandas/Varandas/Homepage.html>