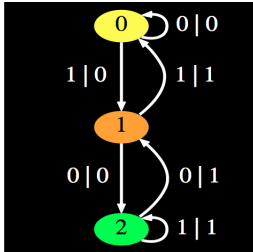




Centro de Matemática
Universidade do Porto



Joint Seminar on Dynamical Systems, Semigroups, Automata and Languages

Date. July 19, 14h30

Place. Room **M031**

Speaker. Alfredo Costa¹ (FCTUC - CMUC)

Title. Syntactic invariants of flow equivalence of symbolic dynamical systems

Abstract. All information about a symbolic dynamical system X is contained in the language $L(X)$ of its finite blocks. In formal language theory, the syntactic semigroup of a language often plays an important role. Here we consider the syntactic semigroup $S(X)$ of $L(X)$, and more precisely, a finite category built from it, the Karoubi envelope $K(X)$ of $S(X)$. We prove that, up to natural equivalence of categories, $K(X)$ is invariant under flow equivalence. Several flow equivalence invariants — some new and some old — are obtained from $K(X)$. Another application concerns the classification of Markov-Dyck symbolic dynamical systems: it is shown that, under mild conditions, two graphs define flow equivalent Markov-Dyck systems if and only if they are isomorphic.

This is joint work with Benjamin Steinberg.

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

¹Alfredo Costa is currently Assistant Professor at FCTUC (University of Coimbra). He obtained the M.Sc. (2003) and Ph.D. (2007) degrees in *Mathematics* at University of Porto under the supervision of Prof. Jorge Almeida. Alfredo is interested in connections between semigroup theory and symbolic dynamics, particularly in the study of the structure of free profinite semigroups and in the classification of symbolic dynamical systems. His homepage is <http://www.mat.uc.pt/~amgc/>.