Centro de **Matemática**
Universidade do Porto

Seminar on
Semigroups, Automata and Languages

Rational Embeddings of Hyperbolic Groups.

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Abstract: For a finitely generated group, the Cayley graph is a metric space encoding the structure of the group. Gromov introduced the notion of a δ-hyperbolic group, a finitely generated group with a negatively curved Cayley graph, that is, for any triangle in the graph with geodesic sides, each side is contained in the δ-neighborhood of the union of the two other sides. Hyperbolic groups are "prevalent" among finitely generated groups.

Grigorchuk, Nekrashevich, Sushchanskii defined the Rational group as the full group of homeomorphisms of a Cantor space and which admit precisely finitely many types of "local actions" described by finite state transducers. This is a rather large group and, by construction, it contains all groups generated by finite state automata (for example, the Grigorchuk group of intermediate word growth).

In this talk I will introduce these groups and some of their properties and explain how to embed a class of hyperbolic groups in the rational group. We will also briefly touch upon the Chomsky hierarchy classifying groups via automata and where this work is currently heading.

Parts of this talk are joint with James Belk (Bard College), Collin Bleak (University of St. Andrews) and James Hyde (University of St. Andrews).

Date: Friday, 5 January 2018, 14:30
Place: Room FC1.030, DMat-FCUP