

# SEMINÁRIO

9 de Maio de 2008

(Departamento de Matemática, sala Sousa Pinto, 11:30-12:30)

**Título:** Enumeration and generation with a string automata representation.

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**Resumo:** The representation of combinatorial objects is decisive for the feasibility of several enumerative tasks. In this work, we present a unique string representation for complete initially-connected deterministic automata (ICDFAs) with  $n$  states over an alphabet of  $k$  symbols. For these strings we give a regular expression and show how they are adequate for exact and random generation, allow an alternative way for enumeration and lead to an upper bound for the number of ICDFAs. The exact generation algorithm can be used to partition the set of ICDFAs in order to parallelize the counting of minimal automata, and thus of regular languages. A uniform random generator for ICDFAs is presented that uses a table of pre-calculated values. Based on the same table, an optimal coding for ICDFAs is obtained.