



Centro de Matemática
Universidade do Porto

Seminar on Semigroups, Automata and Languages

Automaton semigroup free products revisited

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Abstract:

I will present the latest development in my quest to understand whether the free product of two automaton semigroups must always be an automaton semigroup.

Automaton semigroups are semigroups of endomorphisms of regular rooted trees, in which the generating endomorphisms are defined by the action of the states of a deterministic finite-state letter-to-letter transducer.

Together with Alan Cain (CMA), I showed in 2015 that a free product of two automaton semigroups is again an automaton semigroup if the base semigroups each contain an idempotent or are both homogeneous. I will outline the construction used to obtain that result, and then explain how to modify it to show the following more general result:

Theorem Let S and T be automaton semigroups such that there is a homomorphism from one to the other. Then the free product of S and T is an automaton semigroup.

This is joint work with Jan Philipp Wächter and Janette Welker (Stuttgart).

I will give a brief introduction to automaton semigroups in order to establish notation and terminology, but will assume some familiarity with the concepts due to Jan Philipp Wächter's recent talk in this seminar.

Date: Friday, 26 February 2021, 14:30

Place: Online Zoom meeting



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