

On torsion elements in a (semi)group generated by a reversible automaton.

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joint works with Thibault Godin, Matthieu Picantin, and Dmytro Savchuk

We introduce a labeling of the orbit tree of an invertible Mealy automaton in order to give a characterization of torsion elements in the semigroup generated by the dual automaton, in terms of a path property in this tree. This leads to new results for invertible-reversible Mealy automata: (i) a connected 3-state automaton cannot generate an infinite Burnside group; (ii) a semigroup generated by an automaton with no bireversible component is torsion-free.