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Groups with logspace normal forms

We consider the class of finitely generated groups which have a normal form computable in logspace. We prove that the class of such groups is closed under passing to finite index subgroups, direct products, wreath products, and certain free products and infinite extensions, and includes the solvable Baumslag-Solitar groups, as well as non-residually finite (and hence non-linear) examples. We define a group to be logspace embeddable if it embeds in a group with normal forms computable in logspace. We prove that finitely generated nilpotent groups are logspace embeddable. It follows that all groups of polynomial growth are logspace embeddable.

joint work with Murray Elder and Gillian Elston