"Group Theory International" Online Seminar

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"Rational subsets of wreath products"

Thursday, Feb 28, noon (New York Time)

Abstract:

A subset of a group G is called rational if it is a homomorphic image of a regular set of words. The rational subset membership problem for a finitely generated group G asks whether a given group element belongs to a given rational subset of G. This problem generalizes the classical subgroup membership problem (generalized word problem). Only very few classes of groups with decidable rational subset membership problems are known. Examples are free groups, f.g. abelian groups and certain graph groups. In this talk, we will consider the rational subset membership problem for wreath products. We will sketch proofs for the following two results:
(i) The rational subset membership problem is decidable for every wreath product H wr V, where H is a finite group and V is virtually free (this includes e.g. the famous lamplighter group).
(ii) The rational subset membership problem is undecidable for the wreath product Z wr Z (where Z is the group of integers). Actually, undecidability already holds for a fixed finitely generated submonoid of Z wr Z.
This is joint work with Benjamin Steinberg (CCNY) and Georg Zetzsche (Univ. Kaiserslautern).

Next presentation: Mar 14, Murray Elder *(University of Newcastle, Australia)*

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