Arithmetic in groups of piece-wise affine permutations of an interval

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Bardakov and Tolstykh have recently shown that the Richard Thompson's group F interprets the Arithmetic $(\mathbb{Z}, +, \times)$ with parameters. We consider a class of infinite groups of piece-wise affine permutations of an interval which contains all the three groups of Thompson and some classical families of finitely presented infinite simple groups. We have interpreted the Arithmetic in all the groups of this class. In particular we have obtained that the elementary theories of all these groups are undecidable. Additionally, we have interpreted the Arithmetic in F and some of its generalizations without parameters.

This is a joint work with Tuna Altinel.