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Coherence, subgroup separability, and metacyclic structures for a class of cyclically presented groups

Abstract:

We study a class M of cyclically presented groups that includes both finite and infinite groups and is defined by a certain combinatorial condition on the defining relations. This class includes many finite metacyclic generalized Fibonacci groups that have been previously identified in the literature. By analysing their shift extensions we show that the groups in the class M are are coherent, subgroup separable, satisfy the Tits alternative, possess finite index subgroups of geometric dimension at most two, and that their finite subgroups are all metacyclic. Many of the groups in M are virtually free and some are free products of metacyclic groups and free groups. We classify the finite groups that occur in M, giving extensive details about the metacyclic structures that occur, and we use this to prove an earlier conjecture concerning cyclically presented groups in which the relators are positive words of length three. We show that any finite group in the class M that has fixed point free shift automorphism must be cyclic.

This is joint work with Gerald Williams (University of Essex).