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Multifraction Reduction in Artin–Tits Groups

Patrick Dehornoy*

patrick.dehornoy@unicaen.fr

Artin–Tits groups are the braid groups associated with Coxeter groups, and their word problem remains unsolved in the general case. Multifraction reduction is a new rewrite system providing for certain Artin–Tits groups ("FC type") a normal form that extends Ore's fractional decomposition. In the general case, reduction need not give a unique normal form, but massive experiments and partial results support the conjecture that it still solves the word problem. The decidability of the method relies on results by Dyer and Hohlweg about low elements in the underlying Coxeter group, and it is reasonable to think that the main open question ("semiconvergence of reduction") is directly connected with combinatorial properties of the Coxeter group.

*Laboratoire de mathématiques Nicolas Oresme, Université de Caen, 14032 Caen, France