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Section:

2. Algebra

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On a generalization of Coxeter groups

Groups defined by relations $x_i^{k_i} = e (1 \leq i \leq n)$, $w_{ij}(x_i, x_j)^{k_{ij}} = e (1 \leq i < j \leq n)$, where w_{ij} is a cyclically reduced word in the free product of cyclic groups of orders k_i and k_j, are considered. It is supposed that k_i, $k_{ij} \geq 2$ and w_{ij} is not a power of one letter. It is proved that $\operatorname{ord} x_i = k_i$ and $\operatorname{ord} w_{ij}(x_i, x_j) = k_{ij}$. This extends known results about Coxeter groups and generalized triangle groups. The proof uses ideas of [1] where the partial case $w_{ij}(x_i, x_j) = x_i^{p_{ij}} x_j^{q_{ij}}$, $(p_{ij}, k_i) = (q_{ij}, k_j) = 1$, was considered.

References:

[1] S. V. Tsaranov, *On a generalization of Coxeter groups*, Algebras Groups Geom. **6** (1989), 281–318;
[2] E. V. Vinberg, *Groups defined by periodic paired relations*, Matem. Sbornik **188** (1997), 3–12 (Russian); English transl: Sbornik: Mathematics **188** (1997), 1269–1278.