On the conjugacy problem in a group $\mathbf{F/N_1 \cap N_2}$.

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Let $F = F(A)$ be a free group generated by a finite alphabet A. Let N_1 (respectively N_2) be the normal closure of a finite non-empty symmetrized set R_1 (respectively R_2) of cyclically reduced words of F.

If two words u and v of F present equal elements both in F/N_1 and in F/N_2, they do so in $F/N_1 \cap N_2$. It is natural to ask whether u and v present conjugate elements in $F/N_1 \cap N_2$, if u and v do so both in F/N_1 and in F/N_2? Evidently the answer is negative (the simplest example is $F = F(a, b, c)$, $R_1 = \{a^{\pm 1}\}$, $R_2 = \{b^{\pm 1}\}$, $u = c^2ba$, $v = cbca$).

The aim of this work is to find out under what conditions on R_1 and R_2, the solvability of the conjugacy problem in $F/N_1 \cap N_2$ follows from that in F/N_1 and F/N_2. Here the conjugacy problem is understood in the following way: for a group $\hat{G} = F/N$, decide whether or not words u and v from F present cojugate elements in $\hat{G}$, and in the case of the affirmative answer find $h \in F$ such that $u = h^{-1}vh$ in $\hat{G}$.

It is well known (see Theorem 7.6 [1]) that if R_i satisfies the small cancellation condition $C(6)$, then the conjugacy problem is solvable in $G_i = F/N_i$. The main result of the present paper is the following

Theorem 1 *Let $R_1 \cup R_2$ be a set satisfying the small cancellation condition $C(6)$ and $G = \langle A \mid R_1 \cup R_2 \rangle$ be an atorical presentation. Then the conjugacy problem is solvable in $F/N_1 \cap N_2$.*

It is well known that the condition $C(7)$ is sufficient for atoricity (the proof of this fact is similar to one of Theorem 13.3 [2]). Therefore we have:

Corollary 1 *Let $R_1 \cup R_2$ be a set satisfying the small cancellation condition $C(7)$. Then the conjugacy problem is solvable in $F/N_1 \cap N_2$.*

References

[1] **R.S.Lindon** and **P.E.Schupp,** *Combinatorial group theory,* Springer-Verlag, Berlin - Heidelberg - NewYork, 1977.

[2] **A.Yu. Ol'shanskii,** *Geometry of defining relations in groups*, Moscow, "Nauka", 1989 (in Russian).

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