Zentralblatt–MATH

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Free products of residually p-finite groups with commuting subgroups. (English)

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Let p is a prime number. A group G is said to be residually p-finite if for each $1 \neq x \in G$ there exists a normal subgroup N of p-power index in G ($N <_p G$) such that $x \notin N$. It is well known that a free product of two finite p-groups, amalgamating a cyclic subgroup is residually p-finite [*G. Higman*, J. Algebra 1, 301-305 (1964; Zbl 246.20015)]. This result has been generalized by *G. Kim* and *J. McCarron* [J. Algebra 162, No. 1, 1-11 (1993; Zbl 804.20024)] to certain free products of finitely many residually p-finite groups, amalgamating a cyclic subgroup.

The main result of the article under review is the following theorem. Let G and H be residually p-finite groups with subgroups $C < A < G$ and $D < B < H$. If, given any $a \in A \setminus C$, $g \in G \setminus A$, $b \in B \setminus D$ and $h \in H \setminus B$, there exist $R <_p G$, $S <_p G$, $U <_p H$ and $V <_p H$ such that $a \notin CR$, $g \notin AS$, $b \notin DU$ and $h \notin BV$, then $P = \langle G * H; [A, D], [C, B] \rangle$ is residually p-finite.

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