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Conjugacy separability of certain free product amalgamating retracts. (English)

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The conjugacy separability of free products of conjugacy separable groups amalgamating along retracts is studied. The main theorem is as follows: Theorem. Let $G_i = E_i \cdot H$ ($i \in I$) be conjugacy separable split extensions of E_i by a retract $H = \langle h \rangle$. Assume that, for each $i \in I$, G_i satisfies the following: (D1) If there exist $u_i, v_i \in E_i$ such that $u_i \notin Hv_iH$ then there exists $P_i \triangleleft_f E_i$ such that $P_i \triangleleft G_i$ and $u_i \notin P_iHv_iH$; (D2) If there exists $u_i \in E_i$ such that $[u_i, h^j] \neq 1$ for all $j \neq 0$, then for any integer $\varepsilon > 1$, there exists $P_i \triangleleft_f E_i$ such that $P_i \triangleleft G_i$ and $[u_i, h^j] \in P_i$ implies $\varepsilon \mid j$. Then the free amalgamated product $G = G_1 *_H G_2$ is conjugacy separable.

Using this theorem the author deduces the conjugacy separability of G when (i) G_i are free-by-finite; (ii) G_i are polycyclic-by-finite; (iii) G_i are finitely generated Fuchsian; (iv) E_i is free and G_i has nontrivial center; (v) $G_i = \langle t, b \mid (t^{-1}b^\alpha t b^\beta)^s \rangle$, where $s > 1$; (vi) $G_i = \langle t, b \mid (t^{-1}b^\alpha t b^\beta)^s \rangle$, where $|\alpha| = |\beta|$ or $|\alpha| = 1$ or $|\beta| = 1$.

Note that in cases (i)-(iii) and (vi) the result was also proved by *L. Ribes*, *D. Segal* and the reviewer [in J. Lond. Math. Soc., II. Ser. 57, No. 3, 609-628 (1998; Zbl 0922.20031)].

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