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Bounded Conjugators for Real Hyperbolic and Unipotent Elements in Semisimple Lie Groups

Let G be a real semisimple Lie group with trivial centre and no compact factors. Given a conjugate pair of either real hyperbolic elements or unipotent elements a and b in G we find a conjugating element $g \in G$ such that $d_G(1, g) \leq L(d_G(1, u) + d_G(1, v))$, where L is a positive constant which will depend on some property of a and b (when a, b are unipotent we require that the Lie algebra of G is split). For the vast majority of such elements however, L can be assumed to be a uniform constant.

Keywords: Geometric group theory, conjugacy problem, semisimple Lie groups.

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