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Combination of discrete subgroups of $O^+(1,n)(\mathbb{R})$

Proposition: Let $\Gamma_1, \Gamma_2 <_{\mathbb{d}} \text{Moeb}(S^{n-1})$ have fundamental domains $D_1, D_2 \subseteq S^{n-1}$ such that

$$\begin{aligned} D_2^c &\subseteq \mathring{D}_1 \\ D_1^c &\subseteq \mathring{D}_2 \end{aligned}$$

Then

$$G := \langle \Gamma_1, \Gamma_2 \rangle \cong \Gamma_1 * \Gamma_2$$

has a fundamental domain $D_1 \cap D_2$ for the action $G \curvearrowright S^{n-1}$.

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And it has 11 siblings.

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