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<tr><th>authors</th><td>Arielle Leitner</td></tr>
<tr><th>title</th><td>A classification of subgroups ofSL(4,R)isomorphic toR3and generalized cusps in projective 3 manifolds</td></tr>
<tr><th>publication_date</th><td>2016-01-01 00:00:00</td></tr>
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<tr><th>journal</th><td>Elsevier BV</td></tr>
<tr><th>volume</th><td></td></tr>
<tr><th>doi</th><td>10.1016/j.topol.2016.04.005</td></tr>
<tr><th>urls</th><td>https://web.archive.org/web/20180724091901/https://manuscript.elsevier.com/S0166864116300323/pdf/S0166864116300323.pdf</td></tr>
<tr><th>id</th><td>id-3121647315358814990</td></tr>
<tr><th>abstract</th><td>This paper uses work of Haettel to classify all subgroups of P GL 4 (R) isomorphic to (R 3 , +), up to conjugacy. We use this to show there are 4 families of generalized cusps up to projective equivalence in dimension 3. There are 15 conjugacy classes of subgroups in P GL 4 (R) isomorphic to (R 3 , +), see Theorem 1.1 for the precise list. Classification of abelian subalgebras of sl(n, R) has long been of interest and closely related problems have been studied in [7], [9], [13], and [14]. The remainder of the paper applies this result to classify generalized cusps in convex projective manifolds of dimension 5 3. Suppose M is a manifold of dimension greater than 2. By Mostow-Prasad rigidity, a finite volume hyperbolic structure on M is unique up to isometry. The notion of a hyperbolic structure on a manifold may be generalized to a properly convex projective structure as follows. A convex set with non-empty interior 10 Î© âŠ‚ RP n is properly convex if the closure is disjoint from some projective hyperplane. A properly convex manifold is M = Î©/Î“ where Î“ âŠ‚ P GL n+1 (R) is discrete and acts freely on Î©. If n = 3 such an M is a generalized cusp if M is diffeomorphic to T 2 Ã— [0, âˆž) and âˆ‚M is strictly convex (contains no line segment). 15 In the case of convex projective structures, there is no notion of Mostow rigidity, so there is a richer deformation theory. When M is closed, Koszul [10], shows that small deformations in the holonomy of hyperbolic structures yield properly convex projective structures. When M is not compact, Koszul's result no longer holds. Cooper, Long and Tillmann [3], have shown Koszul's result 20</td></tr>
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