

Apanasov, B. N.**Parabolic vertices and the property of finiteness for Kleinian groups in space.** (Russian)[Zbl 0567.57008](#)

Sib. Mat. Zh. 25, No. 4(146), 9-27 (1984).

The paper gives a simplified proof of geometric finiteness criteria of the hyperbolic structure of a manifold M^n , $n \geq 4$ [they were obtained earlier by the author, Sib. Mat. Zh. 23, No.6, 16-27 (1982; [Zbl 0519.30038](#)); Ann. Global Anal. Geom. 1, No.3, 1-22 (1983; [Zbl 0531.57012](#)), see also his book "Discrete transformation groups and manifold structures", Nauka, Novosibirsk (1983)]. The principal distinction of this case from the known one before, $n \leq 3$ [*A. Beardon* and *B. Maskit*, Acta Math. 132, 1-12 (1974; [Zbl 0277.30017](#)); *A. Marden*, Ann. Math., II. Ser. 99, 383-462 (1974; [Zbl 0282.30014](#)); *W. P. Thurston* "The geometry and topology of 3-manifolds", Mimeographed Math. Notes, Princeton, Chapter 8.4], is due to the fact that at $n \geq 4$ the "thin" ends of the manifold H^n/G are not, generally speaking, the horoball factor by the action of the Bieberbach group [see the author's paper Ann. Global Anal. Geom. 3, 1-11 (1985; [Zbl 0537.57007](#))].

The methods of the paper and the results of *D. Sullivan* [Publ. Math., Inst. Hautes Étud. Sci. 50, 171-202 (1979; [Zbl 0439.30034](#))] also allow the author to obtain the rigidity condition of deformations of n -dimensional hyperbolic manifolds with boundary (Theorem 9.9). The exactness of these conditions is obtained by modification of the author's wellknown construction [Dokl. Akad. Nauk SSSR 243, 829-832 (1978; [Zbl 0414.20038](#))].

MSC:

- 57N15 Topology of the Euclidean n -space, n -manifolds ($4 \leq n \leq \infty$) (MSC2010) Cited in **3** Reviews
- 57S30 Discontinuous groups of transformations
- 51M10 Hyperbolic and elliptic geometries (general) and generalizations
- 22E40 Discrete subgroups of Lie groups

Keywords:

geometric finiteness; hyperbolic structure of a manifold; Discrete transformation groups; ends; rigidity condition of deformations; hyperbolic manifolds with boundary

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