Weiss, Hartmut
Global rigidity of 3-dimensional cone-manifolds. (English) Zbl 1184.53049
J. Differ. Geom. 76, No. 3, 495-523 (2007).

Summary: We prove global rigidity for compact hyperbolic and spherical cone-3-manifolds with cone-angles $\leq \pi$ (which are not Seifert fibered in the spherical case), furthermore for a class of hyperbolic cone-3-manifolds of finite volume with cone-angles $\leq \pi$, possibly with boundary consisting of totally geodesic hyperbolic turnovers. To that end we first generalize the local rigidity result contained in [Wei] to the setting of hyperbolic cone-3-manifolds of finite volume as above. We then use the techniques developed by *M. Boileau, B. Leeb* and *J. Porti* [Ann. Math. (2) 162, No. 1, 195–290 (2005; Zbl 1087.57009)] to deform the cone-manifold structure to a complete non-singular or a geometric orbifold structure, where global rigidity holds due to Mostow-Prasad rigidit [*G. D. Mostow*, Publ. Math., Inst. Hautes Étud. Sci. 34, 53–104 (1968; Zbl 0189.09402); *G. Prasad*, Invent. Math. 21, 255–286 (1973; Zbl 0264.22009)], in the hyperbolic case, resp. [*G. de Rham*, in: Differ. Analysis, Bombay Colloquium 1964, 27–36 (1964; Zbl 0145.44004); cf. also [*M. Rothenberg*, Proc. Symp. Pure Math., Vol. 32, Part 1, 267–311 (1978; Zbl 0426.57013)], in the spherical case. This strategy has already been implemented successfully by [Koj] in the compact hyperbolic case if the singular locus is a link using Hodgson- Kerckhoff local rigidity [*C. D. Hodgson* and *S. P. Kerckhoff*, J. Differ. Geom. 48, No. 1, 1–59 (1998; Zbl 0919.57009)].

MSC:

53C24 Rigidity results

Full Text: DOI Euclid arXiv