Hölder Compactification for Some Manifolds with Pinched Negative Curvature Near Infinity

Eric Bahuaud and Tracey Marsh

Abstract. We consider a complete noncompact Riemannian manifold $M$ and give conditions on a compact submanifold $K \subset M$ so that the outward normal exponential map off the boundary of $K$ is a diffeomorphism onto $M \setminus K$. We use this to compactify $M$ and show that pinched negative sectional curvature outside $K$ implies $M$ has a compactification with a well-defined Hölder structure independent of $K$. The Hölder constant depends on the ratio of the curvature pinching. This extends and generalizes a 1985 result of Anderson and Schoen.

Department of Mathematics, University of Washington, Seattle, Washington 98195, U.S.A.
e-mail: ebahuaud@math.univ-montp2.fr
marsh_tracey@hotmail.com

Received by the editors February 15, 2006; revised November 14, 2006.
AMS subject classification: 53C20.