Rosenberg, Harold; **Spruck, Joel**

On the existence of convex hypersurfaces of constant Gauss curvature in hyperbolic space.

(English) Zbl 0823.53047
J. Differ. Geom. 40, No. 2, 379-409 (1994).

Let M be a complete embedded K-hypersurface of a hyperbolic $(n+1)$- space H^{n+1}, that is the Gauss-Kronecker curvature of M is the constant $K = K_{\text{ext.}} - 1$ (sic), where $K_{\text{ext.}}$ is the determinant of the second fundamental form. The authors prove that a codimension-one embedded submanifold Γ of $\partial_\infty(H^{n+1})$ is the asymptotic boundary of such an M for any $K \in (-1, 0)$. The authors' approach is to construct the desired M as the limit of K-graphs over a fixed compact domain in a horosphere for appropriate boundary data. Thus an important part of their study is an existence theory for K-hypersurfaces which are graphs over a bounded domain in a horosphere. This is accomplished by solving a Monge-Ampère equation for the Gauss curvature using the recent work of *B. Guan* and the second author [Ann. Math., II. Ser. 138, No. 3, 601-624 (1993)]. For a codimension-two closed submanifold Γ of H^{n+1}, there are topological obstructions for Γ to bound a hypersurface with $K > -1$ [the first author, Bull. Sci. Math., II. Sér. 117, No. 2, 211-239 (1993; Zbl 0787.53046)].

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MSC:

53C42	Differential geometry of immersions (minimal, prescribed curvature, tight, etc.)	Cited in **1** Review Cited in **12** Documents

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