

CONSTANT MEAN CURVATURE SURFACES IN EUCLIDEAN AND MINKOWSKI THREE-SPACES*

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Abstract. Spacelike constant mean curvature (CMC) surfaces in Minkowski three-space \mathbb{L}^3 have an infinite dimensional generalized Weierstrass representation. This is analogous to that given by Dorfmeister, Pedit and Wu for CMC surfaces in Euclidean space, replacing the group $SU(2)$ with $SU(1, 1)$. The non-compactness of the latter group, however, means that the Iwasawa decomposition of the loop group, used to construct the surfaces, is not global. The construction is described here, with an emphasis on the difference from the Euclidean case.

1. Introduction

This article expands on the content of a talk given at the X-th International Conference on *Geometry, Integrability and Quantization*, held in Varna 2008. It discusses the generalized Weierstrass representation for constant mean curvature surfaces in both the Euclidean and in the Minkowski three-space, with attention given to the difference between these cases. Detailed proofs and further results on the Minkowski case will appear in a forthcoming article by the authors [2].

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