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# A PARAMETRIZATION OF ISOMETRIC IMMERSIONS BETWEEN ANTI-DE SITTER SPACE-TIMES

Dedicated to Professors Haruo Kitahara and Syûkichi Tanno on their sixtieth birthday

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**Abstract**

The space of isometric immersions of an $n$-dimensional anti-de Sitter space-time into another with codimension one is described in terms of certain families of countable $n$-tuples of real-valued functions.

## 1. Introduction

A fundamental problem in differential geometry is to characterize and determine all the submanifolds in a space form. A complete solution to the problem in the generality as stated above simply seems beyond the reach of the current mathematics. Historically, various conditions were imposed upon so as to make the problem somewhat more feasible, if not more viable. One of such conditions is to restrict submanifolds to being of codimension one and of the same constant curvature as the ambient space. The problem has received considerable attention under this rather restricted state; indeed, it has seen much progress.

For example, the problem has long been settled for the Riemannian space forms of non-negative curvature (see [5] and [11] for more information). In the hyperbolic case, only some partial solutions (see [2], [7], [9], [10]) existed until a lengthy but more complete description of the space was recently obtained (see [4]). In the indefinite case, Graves ([6]) gave the answer to the problem for the flat Lorentzian space forms. The case involving the de Sitter space forms was treated in [1].

Key words and phrases. isometric immersion, anti-de Sitter space-time, fundamental theorem for hypersurfaces, universal pseudo-Riemannian covering manifold.

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