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A MODULI SPACE OF MINIMAL ANNULI

KATSUHIRO MORIYA

Institute of Mathematics, University of Tsukuba
Tsukuba-shi, Ibaraki 305-8571, Japan

Abstract. In this paper, we will report a recent study about moduli spaces of branched and complete minimal surfaces in Euclidean space of genus one with two ends and total curvature -4π.

1. Introduction

The purpose of this paper is to report recent results on moduli spaces of certain minimal surfaces and their geometric properties [5].

A complete conformal minimal immersion X from an open Riemann surface M to the Euclidean space $\mathbb{R}^n$ of finite total curvature is an immersion such that M can be compactified conformally. Moduli spaces of these minimal immersions have been studied from several viewpoints (cf. Pérez and Ros [7, 8], Ros [11], Yang [12], Kusner and Schmitt [2], Pirola [9, 10], and Moriya [3]).

The Riemann surface M can also be compactified conformally in the case where $X\colon M \to \mathbb{R}^3/T(v)$ is a branched complete conformal minimal immersion of finite total curvature, where $T(v)$ is the discrete group of isometries generated by a translation by $v \in \mathbb{R}^3$ (Lemma 2.1). We will call a branched complete conformal minimal immersion $X\colon M \to \mathbb{R}^3/T(v)$ of finite total curvature a minimal surface of algebraic type, or simply, an algebraic minimal surface.

Xiaokang Mo studied a moduli space of Weierstrass data for algebraic minimal surfaces in $\mathbb{R}^3$ in terms of **divisor spaces** and Kichoon Yang introduced it in his book [12].

We will call an algebraic minimal surface of genus 0 with two puncture points an algebraic minimal annulus. In Moriya [4], an example of a moduli space of Weierstrass data for algebraic minimal annuli is investigated in terms of divisor spaces and the defining equations of the moduli space is obtained.