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SEMI-DISCRETE CONSTANT MEAN CURVATURE SURFACES OF REVOLUTION IN MINKOWSKI SPACE

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Abstract. In this paper we describe semi-discrete isothermic constant mean curvature surfaces of revolution with smooth profile curves in Minkowski three-space. Unlike the case of semi-discrete constant mean curvature surfaces in Euclidean three-space, they might have certain types of singularities in a sense defined by the second author in a previous work. We analyze the singularities of such surfaces.

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1. Introduction

Constant mean curvature (CMC) surfaces of revolution have been well-studied ever since Delaunay found that any profile curve of a CMC surface of revolution (except for sphere) in Euclidean three-space $\mathbb{R}^3$ can be obtained as the trace of one focal point of a quadric (see [4] for example), and these surfaces are now called *Delaunay surface*. As a generalization, Kenmotsu [11] described surfaces of revolution with prescribed mean curvature in $\mathbb{R}^3$. Similarly, Hano and Nomizu [7] showed that the profile curves of spacelike CMC surfaces of revolution with timelike or spacelike axes in Minkowski three-space $\mathbb{R}^{2,1}$ can be also obtained as traces of one focal point of quadrics, and Ishihara and Hara [9] derived explicit parametrizations of spacelike (or timelike) surfaces of revolution with prescribed mean curvature (see also [8], [12] and [19]). On the other hand, unlike the case of CMC surfaces of revolution in $\mathbb{R}^3$, spacelike CMC surfaces of revolution may have singularities