Errata and Addenda

for

Katsuei Kenmotsu's

Surfaces with Constant Mean Curvautre

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A few corrections, and addenda are given. We thank Shinya Hirakawa and Rafael López for pointing out such items.

1 Corrections

1.1 Chapter 4. Helicoidal surfaces

page **59**, last paragraph on page: "If we vary h while fixing other constants, then a rotational surface is isometrically deformed to a helicoidal surface preserving mean curvature H by (4.12)." is not correct, because $U(s)$ in (4.11) depends on h. Nevertheless, the conclusion in the above sentence holds by considering a one-parameter family of those constants a, h, and m. The proof is given in Do Carmo and Dajczer [1]: In the family given in (4.11) of the text, we introduce new parameters (a_0, θ) by setting :

$$\begin{aligned} a &= \frac{a_0 \cos\theta}{1 - 2a_0 H(1 - \cos\theta)} \\ h &= \frac{a_0 \sin\theta}{1 - 2a_0 H(1 - \cos\theta)} \\ m^2 &= \frac{1}{1 - 2a_0 H(1 - \cos\theta)}. \end{aligned}$$

Let us denote by $U(a, h, m)$ the expression of U given by the last formula of (4.11). Fix a_0 and θ, and let a, h, and m be given by the above. Then for all $\theta, 0 \le \theta \le 2\pi$, we have

$$U(a, h, m) = U(a_0, 0, 1).$$

Hence, any helicoidal surface with constant mean curvature can be isometrically deformed from a rotational surface with the same mean curvature

1.2 Chapter 9. Intricate Constant Mean Curvature Surfaces

Page **111**, last line of the hypothesis in Proposition 9.2: "Then, if the boundary Γ of S is symmetric with respect to the y-axis," Add: "and a graph on the y-axis."

Page **112**, last sentence: "For example, the following holds [17]." Change the paper [17] to the paper by Earp, Brito, Meeks, and Rosenberg [2].

2 Addenda

Page **49**, related to the last paragraph, the author has found a criterion for a periodic function to be the mean curvature function of some periodic surface of revolution. See [3] and [4].

Page **93**, supplement to Proposition 7.4: For the equality case, the reference is Theorem 4 in the paper by Serrin [5].

References

[1] M. Do Carmo and M. Dajczer, Helicoidal surfaces with constant mean curvature, Tohoku Math. J. 34(1982), 425–435.

[2] R. Earp, F. Brito, W. Meeks III, and H. Rosenberg, Structure theorems for constant mean curvature surfaces bounded by a planar curve, Indiana Math. J. 40(1991), 333-343.

[3] K. Kenmotsu, Surfaces with periodic mean curvature, Osaka J. Math. 40(2003), 687-696.

[4] K. Kenmotsu, Periodic mean curvature and Bézier curves, *Differential geometry and related topics*, World Sci. Publishing, NJ, 2002, 135-146.

[5] J. Serrin, On surfaces of constant mean curvature which span a given space curve, Math. Zeit. 112(1969), 77-88.