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CORRECTION TO : TUBES OF WEINGARTEN TYPES IN A EUCLIDEAN 3-SPACE

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In Theorem 3.4 in [1], we considered tube in the 3-dimensional Euclidean space $\mathbb{E}^3$ satisfying the linear equation $aK + bH = c$ for $a, b, c \in \mathbb{R}$, where K and H denote the Gaussian curvature and the mean curvature, respectively.

We found some mistakes on the statement and the proof of Theorem 3.4. In fact, the statement and the proof of Theorem 3.4 in [1] should be replaced by the following :

Theorem 1.1. *Every tube in the 3-dimensional Euclidean space is a linear Weingarten surface.*

Proof. Let $T_r(\gamma)$ be a tube parametrized by

$$x = x(t, \theta) = \gamma(t) + r(\cos\theta\mathbf{n}(t) + \sin\theta\mathbf{b}(t)),$$

where $\mathbf{n}$ and $\mathbf{b}$ are the principal normal vector and the binormal vector of a smooth unit speed curve γ. Then the Gaussian curvature K and the mean curvature H in [1] are given by

$$K = -\frac{1}{r\alpha}\kappa\cos\theta, \tag{1.1}$$

$$H = \frac{1}{2r\alpha}(1 - 2r\kappa\cos\theta), \tag{1.2}$$

where $\alpha = 1 - r\kappa(t)\cos\theta$. In this case, the mean curvature H can be written as

$$\begin{aligned} H &= \frac{1}{2r\alpha} - \frac{r}{r\alpha}\kappa\cos\theta \\ &= \frac{1}{2r\alpha} + rK, \end{aligned}$$

which implies

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\begin{aligned}
-r^2K + 2rH &= \frac{1}{2\alpha} + rH \\
&= \frac{1}{2\alpha}(2 - 2r\kappa\cos\theta) \\
&= 1.
\end{aligned}
$$

Thus any tube is a linear Weingarten surface satisfying the linear equation $aK + bH = c$ with $a = -r^2$, $b = 2r$ and $c = 1$. □

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References

[1] J. S. Ro and D. W. Yoon, *Tubes of Weingarten types in a Euclidean 3-space,* J. Chungcheong Math. Soc. **22** (2009), 360-366.

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