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Erratum: Geometry of the Rolling Ellipsoid

ERRATUM: GEOMETRY OF THE ROLLING ELLIPSOID

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In Section 2.2 of the article [1, page 213] the sign of the second fundamental form is incorrect due to sign of the normal vector Λ. In this case, the unit normal vector in line 9 of Section 2.2 should be $\Lambda = -\mathbf{D}^{-2}p/\left|\mathbf{D}^{-2}p\right| \in \mathbf{T}_p^{\perp}\mathcal{E}^n$. The correct expression of the second fundamental form is

$$\mathbf{II}(X,Y) = -\frac{\langle \mathbf{D}^{-1}X, \mathbf{D}^{-1}Y \rangle}{\left|\mathbf{D}^{-2}p\right|^2}\,\mathbf{D}^{-2}p, \quad \text{for any} \quad X, Y \in \mathbf{T}_p\mathcal{E}^n.$$

The error has no effect on the rest of the article, except for the formula in Lemma 3.2, on page 215, and Theorem 3.4, on page 216. The correct formula in Lemma 3.2 is

$$\left(\boldsymbol{\chi}^{-1} \circ \dot{\boldsymbol{\chi}}\right)_* = -\frac{1}{\left|\mathbf{D}^{-2}\sigma_1\right|^2}\left(\mathbf{D}^{-2}\dot{\sigma}_1\right) \wedge \left(\mathbf{D}^{-2}\sigma_1\right).$$

As a consequence the formula in Theorem 3.3, page 215, is

$$\left(\boldsymbol{\chi}^{-1} \circ \dot{\boldsymbol{\chi}}\right)_* = \eta \wedge \dot{\eta}.$$

In Section 3.2, page 216, the mapping $\boldsymbol{\chi}$ is the inverse of the rolling map, which is in error. The correct formula (3) in Theorem 3.4 is

$$\left(\boldsymbol{\chi}^{-1} \circ \dot{\boldsymbol{\chi}}\right)_* = \eta \wedge \dot{\eta}.$$

This error has no effect on the rest of the article.

REFERENCES

[1] K.A. Krakowski and F. Silva Leite: Geometry of the Rolling Ellipsoid. Kybernetika *52* (2016), 2, 209–223. DOI:10.14736/kyb-2016-2-0209

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