Corrigendum to „Preassigning the Shape for Bodies of Constant Width“

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The proof of Theorem 3, [1] needs some modification. In fact, the arguments concerning the case $|x' - u'| \geq c$ on p. 163 are incorrect if the angle $\sphericalangle(u', x', z)$ is sufficiently small. We can overcome this problem by rewriting parts of the proof as follows.

The part on p. 162 is left unchanged, and we adopt the notation introduced there. In particular, $x \in B(y, r) \subset L$, and x' is the antipode of x in L . Now, there are two possibilities.

First assume $B(y, r)$ touches $\text{bd } L$ in a point v different from x . From part (b) of our Lemma it is easy to see that $\text{bd } L$ contains the arc s with center y and radius r joining x and v , hence also the arc s' with center y and radius $2 - r$ joining x' and v' , the antipode of v . For later use we choose points w' in s' and w'' in the relative interior of $\text{conv}(w', x', y)$ such that $|w' - x'| < c$ and $|w'' - w'| = |w'' - x'| = c$ ($< 2 - r$), and define $C := \text{conv}(w', x', w'')$.

Second assume $B(y, r)$ touches $\text{bd } L$ only in x . As $c < 2 - r$, there is an interior point z of $[yx']$ with $|z - x'| > c$ (see Figure 1). By the choice of x , the maximum r_z of the radii t with $B(z, t) \subset L$ satisfies $r_z < |x - z| < 2 - c$, and by the definition of r_z , the ball $B(z, r_z)$ touches $\text{bd } L$ in at least one point u . Let u' be its antipode in L . Then, $u' \in \overline{uz}$ and

$$|u' - z| = 2 - r_z > 2 - |x - z| = |z - x'|. \quad (1)$$

By replacing z by a point closer to x if need be, our assumption on $B(y, r)$ will also imply $|x' - u'| < c$ (note that the regularity of x is used in case $r = 0$). By (1), there exist points u'' in $[u'x']$ and z' in the relative interior of $\text{conv}(u', x', z)$ such that $|z' - u''| = |z' - x'| = c$. Define $C' := \text{conv}(u'', x', z')$.

Now, by our assumptions on c , the set C respectively C' of diameter c is embeddable into a body K of constant width c contained in L . But this is impossible, since on the one hand the hyperplane in x' orthogonal to $\overline{xx'}$ supports L , but on the other hand its respective halfspace does not contain all arcs with radius c joining x' and w' respectively u'' , however belonging to K .

The contradiction shows $r \geq 2 - c$. Now the proof can be completed as on p. 164. The set C defined there has diameter c if y and z are chosen such that $|y' - z'| < c$.

Reference

[1] SCHULTE, E., VREĆICA, S.: Preassigning the shape for bodies of constant width. *Mh. Math.* **96**, 157—164 (1983).

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