A remark on [3, Lemma B.3]

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The statement of [3, Lemma B.3] is not correct, unless further conditions on β are imposed, cf. [2]. Using the notation of the latter reference, the proof of this Lemma fails in the case where the Lebesgue measure of the subsets

$$\{x \in K_j : \operatorname{dist}(x, \Omega \setminus K_j) < \delta\} \tag{1}$$

does not tend to zero as $\delta \to 0$. Here, $K_j = K_j(\delta) \subset \Omega$ denotes a compact set such that the restriction to K_j of the approximated function u_j is continuous and $\lambda(\Omega \setminus K_j) < \delta$. The existence of K_j is ensured by Lusin's theorem. Note that (1) fails, for example, if $\mathring{K}_j = \emptyset$. In this situation, the continuous cut-off function g_j defined in the latter reference simply vanishes everywhere on Ω and the constructed sequence does not fulfill the desired approximation property. A corresponding counterexample is provided in [2]. However, the result remains true for continuous obstacles [1] as well as a large class of discontinuous obstacles (e.g., in the case of lower semicontinuity), cf. [2].

The error does not affect the other results in the reference [3].

References

[1] M. Hintermüller and C.N. Rautenberg, *On the density of classes of closed convex sets with pointwise constraints in Sobolev spaces*, Journal of Mathematical Analysis and Applications **426** (2015), no. 1, 585 – 593.

[2] M. Hintermüller, C.N. Rautenberg, and S. Rösel, *Density of convex intersections and applications*, WIAS preprint 2333, Weierstrass Institute for Applied Analysis and Stochastics, 2016.

[3] M. Hintermüller and S. Rösel, *A duality-based path-following semismooth Newton method for elasto-plastic contact problems*, Journal of Computational and Applied Mathematics **292** (2016), 150 – 173.