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On $\mu$-proximity spaces. (English) Zbl 1515.54023


In this paper the authors introduce the notion of a $\mu$-proximity base and consider the properties of the induced $\mu$-proximity spaces. These notions were introduced and studied by Mukherjee, Mandal and Dey in the past [M. N. Mukherjee et al., Afr. Mat. 30, No. 1–2, 91–100 (2019; Zbl 1438.54023)] and that in connection with so-called generalized topological spaces introduced by Á. Császár in [Acta Math. Hung. 96, No. 4, 351–357 (2002; Zbl 1006.54003)]. It is shown that every topological group in the sense of Hussain, Khan and Özel [M. Hussain et al., Filomat 27, No. 4, 567–575 (2013; Zbl 1324.54056)] constitutes a $\mu$-proximity space. Moreover, every proximity base on a set $X$ forms a $\mu$-proximity on it, and in this setting some lower, respectively, higher separation axioms are considered. By defining so-called $\delta_\mu$-continuous maps between the corresponding $\mu$-proximity spaces it is shown that roughly speaking $\mu$-proximity spaces and the $\delta_\mu$-continuous maps are forming a topological construct.

Reviewer: Dieter Leseberg (Berlin)

MSC:
54E05 Proximity structures and generalizations
54A05 Topological spaces and generalizations (closure spaces, etc.)
54D10 Lower separation axioms ($T_0$–$T_3$, etc.)
54D15 Higher separation axioms (completely regular, normal, perfectly or collectionwise normal, etc.)
54H11 Topological groups (topological aspects)

Keywords:
$\mu$-proximity; $\mu$-proximity base; $\delta_\mu$-continuous; $G$-topological group; generalized topology; $\mu$-separated; $\mu$-normal; $\mu$-completely regular

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References:

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