

MORE ON LIPSCHITZ-TYPE FUNCTIONS

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ABSTRACT. Recall that a real function f on a metric space (X, d) is called *Cauchy Lipschitz* if it is Lipschitz when restricted to the totally bounded subsets of X . Moreover, f is *uniformly locally Lipschitz* if there exists some $\delta > 0$ such that f is Lipschitz when restricted to the open balls $B_\delta(x)$ of radius δ for every $x \in X$. In spite of having that the locally Lipschitz are those functions that are Lipschitz of the compact subsets, we have that in general Cauchy Lipschitz functions and uniformly locally Lipschitz functions are different families of functions [1], [2]. In this talk we introduce a couple of new families of Lipschitz-type functions, additionally to the previous ones, by means of the family of the Bourbaki-bounded sets and the consecutive δ -enlargements $B_\delta^m(x)$ of the balls of radius $\delta > 0$. In particular, we prove that the equality between all these families characterize different types of stronger metric completeness [4] and those spaces in which the family of real uniformly continuous functions is a ring [3].

REFERENCES

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