Bolzano-Weierstraß Properties in Ordered Fields of Uncountable Base Number

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The κ-reals, introduced by Galeotti [2] are the natural generalisation of the reals to an uncountable cardinal κ. Carl, Galeotti, and Löwe [1] studied the Bolzano-Weierstraß theorem for the κ-reals and proved that they do not satisfy the (regular) κ-Bolzano-Weierstraß theorem and they characterise the validity of the weak κ-Bolzano-Weierstraß theorem for strongly inaccessible κ.

We improve on the results by Carl, Galeotti, and Löwe by giving a sharpened analysis on when the (regular) κ-Bolzano-Weierstraß theorem fails for non-Archimedean fields and improving their analysis of the weak κ-Bolzano-Weierstraß theorem to arbitrary uncountable cardinals κ.

References

[1] M.Carl, L.Galeotti, B.Löwe, The Bolzano-Weierstraß Theorem in Generalised Analysis, *Houston J. Math* **44** (2018), no. 4, pp. 1081–1109.

[2] L.Galeotti, Computable Analysis Over the Generalized Baire Space, (2015), MSc Thesis, University of Amsterdam, Amsterdam.