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Čebyšev sets in hyperspaces over R^n

A set in a metric space is called a Čebyšev set if it contains a unique “nearest neighbour” to each point of the space. In this paper we generalize this notion, defining a set to be Čebyšev relative to another set if every point in the second set has a unique “nearest neighbour” in the first. We are interested in Čebyšev sets in some hyperspaces over R^n , endowed with the Hausdorff metric, mainly the hyperspaces of compact sets, compact convex sets, and strictly convex compact sets.

We present some new classes of Čebyšev and relatively Čebyšev sets in various hyperspaces. In particular, we show that certain nested families of sets are Čebyšev; as these families are characterized purely in terms of containment, without reference to the semi-linear structure of the underlying metric space, their properties differ markedly from those of known Čebyšev sets. (A conjectured link with symmetry did not materialize; thus this paper has become, in this session, something of a *lucus a non lucendo*.)