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Self-contracted curves in spaces with weak lower curvature bound. (English) Zbl 07398554

Summary: We show that bounded self-contracted curves are rectifiable in metric spaces with weak lower curvature bound in a sense we introduce in this article. This class of spaces is wide and includes, for example, finite-dimensional Alexandrov spaces of curvature bounded below and Berwald spaces of nonnegative flag curvature. (To be more precise, our condition is regarded as a strengthened doubling condition and holds also for a certain class of metric spaces with upper curvature bound.) We also provide the non-embeddability of large snowflakes into (balls in) metric spaces in the same class. We follow the strategy of the last author’s previous paper based on the small rough angle condition, where spaces with upper curvature bound are considered. Here we apply this strategy to spaces with lower curvature bound.

MSC:
53C45 Global surface theory (convex surfaces à la A. D. Aleksandrov)
53C60 Global differential geometry of Finsler spaces and generalizations (areal metrics)
54E99 Topological spaces with richer structures

Keywords:
bounded self-contracted curves; Alexandrov spaces; Berwald spaces; doubling condition; non-embeddability

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