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A geometric second-order-rectifiable stratification for closed subsets of Euclidean space

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Abstract. Defining the m-th stratum of a closed subset of an n dimensional Euclidean space to consist of those points, where it can be touched by a ball from at least $n - m$ linearly independent directions, we establish that the m-th stratum is second-order rectifiable of dimension m and a Borel set. This was known for convex sets, but is new even for sets of positive reach. The result is based on a sufficient condition of parametric type for second-order rectifiability.

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