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About maximal distance minimizers. Regularity and explicit examples

Consider a compact set $M \subset \mathbb{R}^d$ and $l > 0$. A maximal distance minimizer problem is to find a connected compact set Σ of the length (that is, one-dimensional Hausdorff measure $\mathcal{H}^1$) at most l that minimizes

$$\max_{y \in M} \text{dist}(y, \Sigma),$$

where dist stands for the Euclidean distance. In this talk, I will survey known results on maximal distance minimizers, including explicit examples (such as a circle, a rectangle, and a minimizer with an infinite number of corner points), as well as the regularity of their local structure (a finite number of branching points in the plane and at most three tangent rays at any point of a minimizer in any dimension). I will also discuss several open problems in this area.