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Symmetrization and extension of bi-Lipschitz maps

The Lipschitz extension problem is: given a subset A of a metric space X and a Lipschitz map $f: A \rightarrow Y$, find a Lipschitz map $F: X \rightarrow Y$ that agrees with f on A . In addition, one may want to have an estimate on the Lipschitz constant of the extended map. And if the original map had a Lipschitz inverse, it is natural to look for F with the same property. I will describe recent progress in this direction, which involves an attempt to transform a simple closed curve on a plane into a centrally symmetric one, while controlling the increase of the Lipschitz constant of its parametrization.