

# Distortion of dimension by Sobolev and quasiconformal mappings

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The behavior of a Sobolev or quasiconformal mapping on a generic member of a parameterized family of subsets may be significantly better than its worst-case behavior. For instance, quasiconformal mappings are absolutely continuous along almost every parallel line, but can distort the dimensions of individual lines rather badly. I will discuss the effect of quasiconformal and supercritical Sobolev mappings on the Hausdorff dimensions of generic elements in several parameterized families of sets: parallel affine Euclidean subspaces, Grassmannians, left and right cosets of homogeneous subgroups of the Heisenberg group, and fibers of a David-Semmes regular mapping between metric spaces of bounded geometry. These results are new already for quasiconformal mappings of the plane, and hold more generally for mappings into general metric spaces. Supercritical Sobolev integrability is necessary: there exist critical Sobolev surjections from low-dimensional cubes onto a wide variety of metric spaces, including infinite-dimensional spaces. This talk is based on joint work with Balogh, Hajłasz, Mattila, Monti, and Wildrick.

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