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**Francois S. Monard\*** ([fmonard@ucsc.edu](mailto:fmonard@ucsc.edu)). *Recent progress on sharp mapping properties for the geodesic X-ray transform.*

The geodesic X-ray transform is an operator arising in certain imaging problems in media with variable index of refraction or in problems of seismology. In both settings, given a compact Riemannian manifold with boundary, this transform integrates a function over geodesics passing through that manifold. The corresponding inverse problem is to reconstruct a given function from its X-ray transform, by assessing what can be reconstructed, how to reconstruct it, and how stable the inversion is.

For this purpose, recent interest has been gained in accurately capturing the mapping properties of this operator, in cases where the geometry is *simple* (that is, strictly convex, without conjugate points, nor infinite-length curves). We will review recent results in this direction. In particular, we will describe the recent results of [arXiv:1910.13691](https://arxiv.org/abs/1910.13691), where a sharp answer to this problem can be given for a certain class of Riemannian surfaces (geodesic disks of constant curvature). (Received January 18, 2020)