# Wavelet-based reconstruction for limited angle X-ray tomography

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Abstract. The aim of X-ray tomography is to reconstruct an unknown physical body from a collection of projection images. If the projection images are only available from a limited angle of view, the reconstruction problem is an ill-posed inverse problem. Statistical inversion allows regularized solution of the limited angle tomography problem by complementing the measurement data by *a priori* information. In this work, the unknown attenuation distribution inside the body is represented as a wavelet expansion, and a Besov space prior distribution together with positivity constraint is used. The wavelet expansion is thresholded before reconstruction to reduce the dimension of the computational problem. Feasibility of the method is demonstrated by numerical examples using *in vitro* data from mammography and dental radiology.