Analysis of the Inherent Reconstruction Error in Filtered Back Projection

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Abstract

The filtered back projection (FBP) formula allows us to reconstruct bivariate functions from given Radon samples. However, the FBP formula is numerically unstable and low-pass filters with finite bandwidth and compactly supported window functions are employed to make the reconstruction by FBP less sensitive to noise.

In this poster we analyse the inherent reconstruction error which is incurred by the application of a low-pass filter. We present error estimates in Sobolev spaces of fractional order along with asymptotic convergence rates, where the filter's bandwidth goes to infinity.