Tomographic inversion using ℓ_1-norm regularization of wavelet coefficients

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We propose the use of ℓ_1 regularization in a wavelet basis for the solution of linearized seismic tomography problems $\mathbf{Am} = \mathbf{d}$, allowing for the possibility of sharp discontinuities superimposed on a smoothly varying background. An iterative method is used to find a sparse solution $\mathbf{m}$ that contains no more fine-scale structure than is necessary to fit the data $\mathbf{d}$ to within its assigned errors.