1023-86-555 **Felix J. Herrmann*** (fherrmann@eos.ubc.ca), Department of Earth and Ocean Sciences, The University of British Columbia, 6339 Stores Road, Vancouver, BC V6T 1Z4, Canada. *Sparsity- and continuity-promoting seismic image recovery with curvelet frames.*

A nonlinear singularity-preserving solution to seismic image recovery with sparseness and continuity constraints is proposed. The method explicitly explores the curvelet transform as a directional frame expansion that, by virtue of its sparsity on seismic images and its invariance under the Hessian of the linearized imaging problem, allows for a stable recovery of the migration amplitudes from noisy data. The method corresponds to a preconditioning that corrects the amplitudes during a post-processing step. The solution is formulated as a nonlinear optimization problem where sparsity in the curvelet domain as well as continuity along the imaged reflectors are jointly promoted. To enhance sparsity, the ℓ_1-norm on the curvelet coefficients is minimized while continuity is promoted by minimizing an anisotropic diffusion norm on the image. The performance of the recovery scheme is evaluated with 'wave-equation' migration code on a synthetic dataset. (Received September 18, 2006)