1036-41-53 **Eitan Tadmor*** (tadmor@cscamm.umd.edu), Center for Sci. Computation & Math. Modeling, CSCAMM, CSIC Bldg. #406, University of Maryland, College Park, MD 20742, **Suzanne Nezzar** (nezzars@stockton.edu), Richard Stockton College, Pomona, NJ 08240, and **Luminita Vese** (lvese@math.ucla.edu), Department of Mathematics, UCLA, Los Angeles, CA 90095.

Multiscale decomposition of images: deblurring, denoising and segmentation.

We discuss hierarchical multiscale decompositions of images. Viewed as an L^2 function, a given image f is hierarchically decomposed into the sum or product of simpler "atoms" u_k. To this end, the u_k's are obtained as dyadically scaled minimizers of standard functionals arising in image analysis. This leads to the desired hierarchical decomposition, $f \sim \sum Tu_k$, where T is a blurring operator. We characterize such minimizers (by duality) and derive precise energy decomposition of f in terms of its "atmos" u_k. Numerical results illustrate applications of the new hierarchical multiscale decomposition for blurry images, images with additive and multiplicative noise and image segmentation. (Received January 01, 2008)