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and **Stacey Levine**. *Image Fusion Using SURE Guided Piecewise Linear
Estimation*. Preliminary report.

In recent years, a number of image processing algorithms have employed the Gaussian mixture model (GMM) as a probabilistic patch-based paradigm for data classification and signal estimation achieving near state-of-the art results. Yu, Sapiro, and Mallat developed a general framework for solving inverse problems through the connection that the Wiener filter estimation of an image patch from a GMM is precisely equivalent to sparsely representing an image patch using a structured over-complete PCA dictionary. Wang and Morel expand upon this work by developing a piecewise linear estimation (S-PLE) using a flexible Bayesian Gaussian factor model and a SURE (Stein's unbiased risk estimator) guided statistical filter selection. In light of Wang and Morel's results for single image denoising, we show how the S-PLE formulation can be adapted for fusing multiple images that have been corrupted by additive Gaussian noise as well as linear degradations. (Received September 22, 2015)