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**Ozgur Yilmaz\*** (oyilmaz@math.ubc.ca). *Stable sparse approximations via nonconvex optimization.*

We present results pertaining to the ability of  $\ell_p$  minimization to recover sparse and compressible signals from incomplete and noisy measurements. In particular, we extend some results of Candes, Romberg and Tao to the  $p < 1$  case. Our results indicate that depending on the restricted isometry constants and the noise level,  $\ell_p$  minimization with certain values of  $0 < p < 1$  provides better theoretical guarantees in terms of stability and robustness than  $\ell_1$  minimization does. This is especially true when the restricted isometry constants are relatively large. We will describe these results, some interesting implications, numerical experiments, and some open problems. (Received February 05, 2008)