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Stanley Osher* (sjo@math.ucla.edu), Mathematics Dep't, 520 Portola Plaza, UCLA, Los Angeles, CA 90095-1555, and **Wotao Yin, Donald Goldfarb** and **Jerome Darbon**. *A Simple and Efficient Method for Compressed Sensing and Related Optimization Problems.*

We propose a simple and very efficient method for the Basis Pursuit problem: $\min \|u\|_1 : Au=f$ This problem arises in the application of compressed sensing (CS) as recently discovered by Candes, Romberg, Tao, Donoho and others. We show analytically that our approach converges to the exact solution in a finite number of steps and present numerical results showing that a few iterations are enough in most cases. Our approach is particularly useful where matrix-vector multiplications can be computed by fast transforms. By using only matrix-vector multiplications we are able to solve huge compressive sensing problems quickly on a standard PC. This is joint work with Wotao Yin, Donald Goldfarb and Jerome Darbon. (Received September 17, 2007)