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Ashley A. Prater* (ashley.prater.3@us.af.mil). *Source separation of undersampled composite signals via the Dantzig selector.*

The separation of composite signals is a challenging problem with applications in diverse fields such as medical imaging, audio coding, radar remote sensing and atmospheric spectroscopy. Achieving the recovery and separation of the individual components of a composite signal is even more challenging when only a noisy linearly undersampled signal is available for the decoder. However, if the component signals are sparse relative to sufficiently incoherent bases then accurate recovery and separation may be achieved by using the Dantzig selector, a statistical approach to finding a solution to noisy linear regression problems by minimizing the ℓ_1 norm of candidate vectors while constraining the residuals.

In this talk, one possible model for the separation of noisy linearly undersampled signals based on the Dantzig selector with overcomplete dictionaries will be presented, and an algorithm to approximate the solution using the proximity operator will be discussed. Finally, the results of synthetic and real-world numerical experiments supporting the appropriateness of the model, as well as the speed and accuracy of the algorithm, will be presented. (Received September 12, 2014)