1103-94-165 **Sinan Gunturk*** (gunturk@cims.nyu.edu), 251 Mercer Street, New York, NY 10012.
Near-Optimal Quantization for Random Frames.

We introduce a new quantization and reconstruction algorithm for the so-called "Analysis Problem" in (finite) frame theory, and show that it provides a near-optimal solution in the case of random measurements. More specifically, we show that for any $L \geq 2$, if L quantization levels per measurement with respect to a Gaussian frame of m vectors are available to encode the unit ball in $\mathbb{R}^k$, then with overwhelming probability the reconstruction error of this new algorithm is bounded by $\sqrt{k}L^{-(1-\eta)m/k}$ where η is arbitrarily small for sufficiently large problems. Additional features of the proposed algorithm include low computational cost and parallel implementability. Time permitting, we will also discuss generalizations of this algorithm to compressive sampling as well as infinite dimensional systems.

Joint work with Evan Chou. (Received August 18, 2014)