

1103-90-57

**Rongrong Wang\*** (rongwang@math.ubc.ca), 1984 mathematics road, Vancouver, BC V6T1Z2, Canada, and **Ozgun Yilmaz** and **Rayan Saab**. *Sigma-Delta quantization in compressed sensing with sub-Gaussian measurements*. Preliminary report.

We analyze how efficiently Sigma-Delta quantization works for quantizing compressed (sub-Gaussian) measurements of sparse and compressible signals. To this end, we propose a one-stage reconstruction algorithm based on convex optimization that yields consistent reconstruction. The algorithm works in the cases of fine and coarse quantization including one-bit quantization, with a reconstruction error decaying inverse polynomially in the quantization order. We show that this decay rate is nearly optimal among all possible reconstruction algorithms by a geometric argument about quantization cells. When we optimize over all quantization orders, the algorithm can achieve root exponential error decay with respect to the "oversampling factor". Finally, we show that by further compressing the quantized data via a Johnson-Lindenstrauss embedding, exponential decay (as a function of the total bit budget) is achieved. This is joint work with Rayan Saab and Ozgur Yilmaz. (Received August 08, 2014)