

1147-65-489

Ryan Saab* (rsaab@ucsd.edu). *New algorithms and improved bounds for one-bit compressed sensing on manifolds.*

We study the problem of approximately recovering signals on a manifold from one-bit linear measurements drawn from either a Gaussian ensemble, partial circulant ensemble, or bounded orthonormal ensemble and quantized using noise shaping schemes. We assume we are given a Geometric Multi-Resolution Analysis, which approximates the manifold, and we propose a convex optimization algorithm for signal recovery. We prove an upper bound on the recovery error which outperforms prior works that use memoryless scalar quantization. Additionally, our result requires a simpler analysis, and extends the class of measurements beyond Gaussians. We illustrate our results with numerical experiments.

Joint work with M. Iwen, E. Lybrand, and A. A. Nelson. (Received January 24, 2019)