1125-94-853 **Navid Ghadermarzy*** (navidgh@math.ubc.ca), UBC Math Department, 1984 Mathematics Road, Vancouver, BC V6T1Z2, Canada, and **Yaniv Plan** and **Ozgur Yilmaz**. *1-Bit Tensor Completion.* Preliminary report.

We consider the problem of 1-bit tensor completion where a multi-dimensional array (tensor) is estimated from 1-bit measurements of a subset of its entries. These measurements are generated according to a probabilistic model. In order to make the problem feasible, further restrictions must be imposed on the underlying tensor. Specifically, we study "low rank" tensors whose indices have bounded infinity norm.

In order to solve this problem, we study low rank tensors and different norms that can be used to impose low-rank structure on a tensor. In particular, we focus on three classes of tensors: exact low rank tensors, tensors with bounded nuclear norm, and tensors with bounded max-norm and provide theoretical bounds on reconstruction error.

A common practice in solving general low rank tensor completion problems is matricizing the tensor and solving the matricized problem. Our numerical results show that we get significantly better results when we factorize the low rank tensor and employ an alternating method for minimizing the nuclear norm or the max norm. Although these algorithms just approximate the optimal solution, our empirical results confirm the theoretical advantages of solving the 1-bit tensor completion problem instead of matricizing the problem. (Received September 12, 2016)