Abstract:

In this talk, we will consider concentration inequality based statistical methodology for covariance matrices/operators. The use of such inequalities results in non-asymptotic estimators, confidence sets, and hypothesis tests. First, confidence sets will be constructed for covariance matrices given certain classes of probability measures such as strictly log concave measures or measures with bounded support. Then, a regularized estimator for large sparse covariance matrices will be introduced and compared with other such estimators. Time permitting, we will discuss improvements on a key tool for concentration inequality based statistics, Rademacher averages and the Symmetrization inequality, by making use of tools from optimal transport.