1153-62-458 **Ming Yuan*** (ming.yuan@columbia.edu), Department of Statistics, Columbia University, New York, NY 10027. *Information Based Complexity of High Dimensional Sparse Functions.*

We investigate the optimal sample complexity of recovering a general high dimensional smooth and sparse function based on point queries. Our result provides a precise characterization of the potential loss in information when restricting to point queries as opposed to the more general linear queries., as well as the benefit of adaption. In addition, we also developed a general framework for function approximation to mitigate the curse of dimensionality that can also be easily adapted to incorporate further structure such as lower order interactions, leading to sample complexities better than those obtained earlier in the literature. (Received September 03, 2019)