1056-41-926   **Charles Micchelli**, **Yuesheng Xu** and **Haizhang Zhang*** (`haizhang@umich.edu`), Ann Arbor, MI 48109. *Optimal Learning of Bandlimited Functions from Localized Sampling.*

Motivated by the celebrated Shannon sampling theorem, we consider the recovery of a bandlimited function from its localized sampling. The intrinsic approximation error is formulated. In the univariate case, we obtain its upper bound and lower bound estimates, which indicate that the approximation error decays exponentially (but not faster) to zero. A practical algorithm which satisfies the upper bound estimate is provided. Multivariate results are also established. (Received September 18, 2009)