Cheng Cheng* (cheng.cheng@knights.ucf.edu), Junzheng Jiang and Qiyu Sun. Phaseless sampling and reconstruction in a shift-invariant space.

Phase retrieval arises in various fields of science and engineering. In this talk, we consider an infinite-dimensional phase retrieval problem to reconstruct real-valued signals living in a shift-invariant space from their phaseless samples taken either on the whole line or on a discrete set with finite sampling rate. We find an equivalence between nonseparability of signals in a shift-invariant space and their phase retrievability with phaseless samples taken on the whole line. For spline signals of order $N$, we show that they can be well approximated, up to a sign, from their noisy phaseless samples taken on a set with sampling rate $2N - 1$. We also propose a robust algorithm to reconstruct nonseparable signals in a shift-invariant space from their phaseless samples corrupted by bounded noises. (Received June 28, 2017)