

# Stable Phase Retrieval from Locally Connected Measurements

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In finite-dimensional spaces, frames that allow phase retrieval are stable, with a finite stability constant; yet when one considers nested hierarchies of finite-dimensional approximation spaces these constants tend to infinity as the dimension grows, possibly suffering a “curse of dimensionality”, i.e. growth may be exponential in the dimension. In this talk, we will consider the locally stable phase retrieval for frames in infinite-dimensional or finite-but large-dimensional Banach spaces. To study the local stability of phase retrievable signals, we introduce the notion of “locally stable and conditionally connected” (LSCC) measurement scheme associated with frames. We then characterize the phase retrieval stability of the signal by two measures that are commonly used to quantify the connectivity of the graph: the Cheeger constant and the algebraic connectivity.

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