Discovering physics using signal processing CHANDRAMOULI
NYSHADHAM, GUS L.W. HART, Physics and Astronomy, BYU-Provo — Compressive sensing (CS) is a novel technique developed recently in the field of signal
processing. In signal processing, one samples a signal amplitude along the time axis
and reconstructs it from the measured samples. In order to recover the measured
signal one needs to satisfy the "Shannon-Nyquist theorem" which tells that the sampling rate should be at least twice the maximum frequency present in the signal. CS
allows one to recover a sparse signal with a far fewer measurements than required
by the Shannon-Nyquist theorem. We can utilize the CS paradigm to "recover" a
physical model from just a few measurements or calculations[1]. In this talk, I will
present a simple understanding of the concept of compressive sensing and its usage
in realizing physical models.

[1] Lance J. Nelson, Gus L. W. Hart, Fei Zhou and Vidvuds Ozoliņš, "Compressive sensing as a paradigm for building physical models," Phy. Rev. B. 87, 035125
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