

Information spectrum analysis in communications

Po-Ning Chen (陳伯寧)

Institute of Communications Engineering, National Chiao Tung University

Abstract

In this talk, an alternative dimension in the mathematical theory of information since the birth of Shannon theory will be introduced. In place of the traditional notion of entropy and mutual information, the new and unconventional approach of so-called information-spectrum analysis as a basic but powerful tool for constructing the general theory of information will be shown useful when the channel statistics are of no specific structures such as ergodicity and stationarity. It may provide a new non-traditional theoretical reference for communication professionals and statisticians specializing in information theory. Simple examples of its applications will also be addressed in this talk.