

Inference based on the generalized spectrum for integer-valued heavy-tailed time series

Yuichi Goto ¹, Gaspard Bernard ²

¹ Kyushu University ² Academia Sinica

Abstract

Integer-valued time series models are useful for representing count data that may exhibit bubble-like phenomena with sudden bursts. In this talk, we consider the integer-valued Moving Average and Autoregressive models with stable innovations and address the issue of parameter estimation. Due to the presence of heavy tails, classical spectrum-based inference is not applicable in this context, and it is necessary to develop new methods. We propose an approach based on the generalized spectrum obtained using characteristic functions, allowing root-n consistent parameter estimation without any moment assumption. We explore the asymptotic properties of the proposed estimators, as well as their finite sample performance (the latter through simulation studies).

Keywords: Spectral Analysis, Heavy Tails, Integer-valued Time Series