

# 中央研究院統計科學研究所

## 學術演講

講題：Innovation algorithm of fractionally integrated ( $I(d)$ ) process and applications on the estimation of parameters Approximation Conditions.

演講人：Prof. Junichi Hirukawa  
Department of Mathematics, Niigata University

時間：2024-08-19(Mon.) 10:30-11:15

地點：Auditorium, B1F, Institute of Statistical Science ; The tea reception will be held at 10:10.

備註：Lecture in English. Online live streaming through Cisco Webex will be available.

### Abstract

The long memory phenomena frequently occur in the empirical studies of various fields. The fractionally integrated process is the one of the suitable candidate which appropriately represents the long memory property. There are two recursive algorithms for determining the one-step predictors of time series, that is, the Durbin-Levinson algorithm and the innovation algorithm. The Durbin-Levinson algorithm for the fractionally integrated process is well-known and widely used, which naturally derives the Cholesky factorization of the inverse matrix of the covariance matrix of the process. In this talk, we derive the innovation algorithm for the fractionally integrated process. The result is also applied to the derivation of the Cholesky factorization of the covariance matrix of the process in the explicit form. Moreover, the asymptotic theory of Gaussian maximum likelihood estimator (GMLE) is derived in terms of the innovation algorithm.

by Junichi Hirukawa and Kou Fujimori Niigata University and Shinshu University



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