Du
22
MARS.
2024

16h00
 -
17h00

SÉMINAIRE DES DOCTORANTS DE FIME

A sparsity test for multivariate Hawkes processes

Institut Henri Poincaré
Salle 05

INSCRIPTION

Multivariate Hawkes processes (MHP) are a class of point processes in which events at different coordinates interact through mutual excitation. The weighted adjacency matrix of the MHP encodes the strength of the relations, and shares its support with the causal graph of interactions of the process. We consider the problem of testing for causal relationships across the dimensions of a marked MHP. The null hypothesis is that a joint group of adjacency coefficients are null, corresponding to the absence of interactions. The alternative is that they are positive, and the associated interactions do exist. To this end, we introduce a novel estimation procedure in the context of a large sample of independent event sequences. We construct the associated likelihood ratio test and derive the asymptotic distribution of the test statistic as a mixture of χ^2 laws. The performance of our method is illustrated on two sets of financial data. In the first, we consider bid arrivals in online auctions. We provide evidence of a deviation from a static equilibrium in bidder's strategies. We then turn our attention to power trading on the German intraday market, in which we uncover some factors at play in the dynamics of hourly futures' prices.

URL of the page: https://www.ihp.fr/fr/agenda/sparsity-test-multivariate-hawkes-processes

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HORAIRES

L'institut :
• lundi au vendredi de 8h30 à 18h,
• fermé les jours fériés.

Le musée - Maison Poincaré :
• lundi, mardi, jeudi et vendredi
de 9h30 à 17h30,
• samedi de 10h à 18h,
• fermé le mercredi et le dimanche.