

## Matthias Kirchner

**Title:** Hawkes Graphs - The analysis of large multitype event streams

**Abstract:** In this talk we introduce the Hawkes skeleton and the Hawkes graph. These objects summarize the branching structure of a multivariate Hawkes point process in a compact, yet meaningful way. We demonstrate how graph-theoretic vocabulary ('ancestor sets', 'parent sets', 'connectivity', 'walks', 'walk weights', . . . ) is very convenient for the discussion of multivariate Hawkes processes. Based on earlier work, we give a nonparametric statistical procedure to estimate the Hawkes skeleton and the Hawkes graph from data. An application to high-frequency trading in finance is discussed. This talk is based on joint work with Paul Embrechts; see [Embrechts, P., Kirchner, M. (2018): Hawkes Graphs. *Theory of Probability and Its Applications* 62(1), 132-156].