

## Community Detection in Partial Correlation Network Models

(joint work with Gudmundur Gudmundsson and Gabor Lugosi)

### *Abstract*

We introduce a class of partial correlation network models with a community structure for large panels of time series. In the model, series are partitioned into latent groups such that correlation is higher within groups than between them. We then propose an algorithm that allows us to detect the communities using the eigenvectors of the sample covariance matrix. We study the properties of the procedure and establish its consistency. The methodology is used to study real activity clustering in the U.S. and Europe.