



Complex networks from multivariate time series

Milan Palus, David Hartman, and Martin Vejmelka

Academy of Sciences of the Czech Republic, Institute of Computer Science, Prague 8, Czech Republic (mp@cs.cas.cz)

Technical issues related to construction of complex networks from multivariate time series are discussed, namely the definition of network edges using dependence measures estimated from pairs of time series. The estimated connectivity patterns may depend on choices of dependence measures, whether they are linear or nonlinear, global or scale/frequency-dependent. Establishing a uniform threshold, or using statistical testing in order to define an existence of an edge is also an important choice influencing the resulted network. Examples are presented using climate networks obtained using near-surface air temperature grid from NCEP/NCAR reanalysis data.

This study is supported by the GA AS CR project No. IAA300420805.