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ESTIMATION OF MAX-LINEAR MODELS ON DIRECTED ACYCLIC GRAPHS

Abstract: We consider structural equation models where all random variables can be written as a max-linear function of their parents and independent noise variables. For the corresponding graph we assume that it is a directed acyclic graph. We develop estimation methods for this model class. Firstly, we assume that the structure of the graph is given. We derive a generalized maximum likelihood estimator for the weights of the max-linear structural equation model. Secondly, we address the important question of identifiability and estimation of its causal structure. We propose a statistical method and an algorithm based on our theoretical findings.

References:

- [1] Gissibl, N. and Klüppelberg, C. (2015). *Max-linear models on directed acyclic graphs*. URL <http://arxiv.org/abs/1512.07522>.
- [2] Gissibl, N., Klüppelberg, C. and Lauritzen, S. (2016). *Estimation of max-linear models on directed acyclic graphs*. In preparation.
- [3] Gissibl, N., Klüppelberg, C. and Otto, M. (2016). Tail dependence of regularly varying models on directed acyclic graphs. In preparation.