

# Properties of statistical procedures for network structures identification

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Network analysis become popular tool of complex objects analysis last decade. From practical point of view main problem of network analysis is to identify key network structures such as maximum spanning tree [1], threshold graph [2], gaussian graphical model [3, 4] by observations. In the paper properties of procedures from [1], [2], [4] such as optimality, unbiasedness, invariance for network structure identification are investigated. Problem of network structures identification is formulated in the framework of random variables network [5] as multiple decision problem [6]. It is proved that procedures for gaussian graphical model identification and selection by expectations are optimal unbiased procedures. Also it is shown that procedure for threshold graph identification is optimal in the class of invariant procedures with respect to group of shift and scale transformations. Moreover it is proved that statistical procedure for maximum spanning tree identification [1] is invariant with respect to group of shift and scale transformations.

## References

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