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Partial directed coherence applications on EEG data. (English) Zbl 1307.62247

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Summary: This article is a review on multivariate time series relationship and its applications in electroencephalogram (EEG) data. We discussed the coherence function, an analogous function to the linear correlation function. We also studied partial coherence (PC) and partial directed coherence (PDC) functions. The PC function measures the relationship between two components of a multivariate time series when isolating effects of another series. Generally, PDC can be interpreted as the decomposition of partial coherence into multivariate autoregressive models, i.e., as a representation of Granger causality in the frequency domain. Finally, we applied those functions into EEG data from a subject in the resting state. Those functions are very interesting when we are interested not only on the correlation between time series, but also on the causality between them.

MSC:

62P10 Applications of statistics to biology and medical sciences; meta analysis

Cited in 1 Document

62M10 Time series, auto-correlation, regression, etc. in statistics (GARCH)

Keywords:

[time series](#); [cross spectrum](#); [coherence](#); [partial coherence](#); [partial directed coherence](#); [EEG data](#)

Software:

[sapa](#); [wmtsa](#)

Full Text: [Link](#)