

Measures of directed influences between time series in the frequency domain

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Abstract: Quantification of directed influences between time series in the frequency domain is important to study the frequency-specific information flow between neural masses such as those underlying EEG recordings at several channels. For this purpose, several measures of directed influence have been proposed, such as the Noise Contribution Ratio, the Directed Transfer Function, and the Generalized Directed Partial Coherence. In order to overcome some of their drawbacks we introduce measures of directed influence on the basis of new statistical and systemic approaches. Their meanings and properties are discussed, and their performances are illustrated through simulated and real data sets.