Abstract Submitted
for the MAR13 Meeting of
The American Physical Society

Brain Connectivity Inference under Network Spatial Subsampling[1] SELENE DA ROCHA AMARAL, GILSON VIEIRA, LUIZ A. BACCALA, University of Sao Paulo — Neurophysiological time series analysis using functional Magnetic Resonance Magnetic Imaging (fMRI) data can be seen as tool to investigate how the complex networks of neuronal populations interact naturally leading to brain connectivity description issues where it is desirable to process as many simultaneous structures as possible to avoid misleading interaction inferences. Here we systematically use simulations to gauge how connectivity inference is affected when only subsets of network structures are considered through exploratory tools like Partial Directed Coherence (PDC) and confirmatory methods like Dynamic Causal Modeling (DCM). PDC is based on Granger causality and uses autoregressive models to expose the direction of information flow whereas DCM was proposed to characterize neural fMRI connectivity using prior knowlegde of possible connectivity structures. SPM software was used to simulate the full network fMRI data which was subject to realistic noise levels prior to analysis of network structure subsets.

[1]This work has been financially supported by FAPESP/CINAPCE 2011/0150-4

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Date submitted: 14 Dec 2012 Electronic form version 1.4