P31.8 Cortical causality patterns during the execution of a Stroop task in normal subjects by using multimodal integration of high resolution EEG and fMRI recording

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Hierarchical Organization Unveiled by Functional Connectivity in Complex Brain Networks

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How do diverse dynamical patterns arise from the topology of complex networks? We study synchronization dynamics in the cortical brain network of the cat, which displays a hierarchically clustered organization, by modeling each node (cortical area) with a subnetwork of interacting excitable neurons. We find that in the biologically plausible regime the dynamics exhibits a hierarchical modular organization, in particular, revealing functional clusters coinciding with the anatomical communities at different scales. Our results provide insights into the relationship between network topology and functional organization of complex brain networks.