

## Special Issue on Methodological Advances in Brain Connectivity

### Call for Papers

In recent years, neuroscience has recognized that the concept of brain connectivity is central for the understanding of the synergic behavior of cerebral regions which constitute distributed structural and functional networks. Brain connectivity refers to the description of how brain areas interact, encompassing different and interrelated aspects such as anatomical links (structural connectivity), statistical dependencies (functional connectivity), or causal interactions (effective connectivity). As such, the study of brain connectivity has become central both for the investigation of neurophysiological processes typically engaged in cognitive and perceptive processing and for the assessment of a wide variety of neurological disorders.

The main focus of this special issue is on analytical and computational techniques for the investigation of brain connectivity through data analysis, modeling, and integration. Indeed, the fast advancement of multichannel data acquisition technology and processing capability has fostered the development of sophisticated approaches to the study of brain networks. These approaches include multivariate analysis of linear stochastic processes, complexity analysis of nonlinear dynamical systems, principal and independent component analysis, graph theory, structural equation modeling, dynamic causal modeling, and Granger causality analysis. These methodologies have been applied to brain signals acquired in different modalities such as electroencephalography, magnetoencephalography, and functional and diffusion magnetic resonance imaging.

In this context, the special issue will bring together experts from the fields of computational and experimental neuroscience to summarize recent developments and to advance new ideas on various aspects of brain connectivity. Potential topics include, but are not limited to:

- Inference of causality from time series analysis
- Inference of causality from graphical models
- Inference of synchronization from dynamical systems analysis
- Statistical techniques for measuring connectivity
- Effective and functional connectivity
- Structural/anatomical connectivity
- Multimodal neuroimaging for discovering connectivity

- Topology of brain networks
- Connectivity as a tool for assessing clinical disorders and cognitive behaviors

Before submission authors should carefully read over the journal's Author Guidelines, which are located at <http://www.hindawi.com/journals/cmmm/guidelines/>. Prospective authors should submit an electronic copy of their complete manuscript through the journal Manuscript Tracking System at <http://mts.hindawi.com/> according to the following timetable:

Manuscript Due	Friday, 18 November 2012
First Round of Reviews	Friday, 17 February 2012
Publication Date	Friday, 18 May 2012

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