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Jeudi 23 juin 2005

Conférence Systèmes Dynamiques

16h30 – 17h15

*Disentangling the dynamic core: a research program for a neurodynamics
at the large-scale*

Although much is known about the functional architecture of the brain, a comprehensive understanding of its large-scale dynamics remains poorly understood. At this macroscopic level, the existence of large-scale dynamics is confirmed by numerous functional brain mapping studies, showing that multiple distributed cortical areas coordinate their activities during perceptuomotor behavior, therefore constituting a fundamental pole of integration called here a “dynamic core”. Despite a growing body of evidences supporting this view, our understanding of these large-scale brain processes remains hampered by the lack of a theoretical language for expressing these complex dynamical behaviors in mathematical terms. In my conference, I will propose a rough cartography of several recent approaches that offer a conceptual framework to analyze spatiotemporal large-scale brain phenomena. I will emphasize how these methods can be applied, what property might be inferred from neuronal signals and where one might productively proceed for the future. In particular, I will address these issues from a pragmatic point of view on the basis of my own work on epileptic synchronization in human brain.

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