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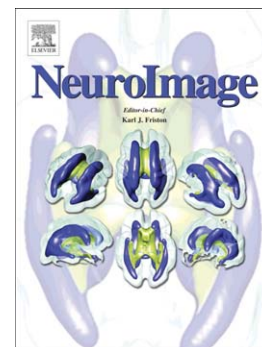
Principal components of functional connectivity: A new approach to study dynamic brain connectivity during rest

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Principal components of functional connectivity:
A new approach to study dynamic brain connectivity
during rest

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Abstract

Functional connectivity (FC) as measured by correlation between fMRI BOLD time courses of distinct brain regions has revealed meaningful organization of spontaneous fluctuations in the resting brain. However, an increasing amount of evidence points to non-stationarity of FC; i.e., FC dynamically changes over time reflecting additional and rich information about brain organization, but representing new challenges for analysis and interpretation. Here, we propose a data-driven approach based on principal component analysis (PCA) to reveal hidden patterns of coherent FC dynamics across multiple subjects. We demonstrate the feasibility and relevance of this new approach by examining the differences in dynamic FC between 13 healthy control subjects and 15 minimally disabled relapse-remitting multiple sclerosis patients.

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