

Prof.dr. Andreas Daffertshofer



Prof. Daffertshofer studied complex dynamics of motor-related neural systems and its formal and conceptual assessment in terms of nonlinear dynamics and non-equilibrium statistics. Research activities cover spatio-temporal aspects of neural synchronization for information transfer during perceptual-motor tasks.

Over the years, he appropriated various methods for the analysis of multivariate signals for kinematic, electromyographic and encephalographic data. For example, he developed methods for the extraction of principal or independent components in the vicinity of qualitative changes in motor performance yielding a significant reduction of dimension and thus allowing for the analysis of motor (in-)stabilities, in general, and for classifying (switches between) gait patterns, in particular, including the patterns of accompanying cortical activity. Furthermore, he added to several research fields in theoretical physics, ranging from quantum information to diffusive systems and generalized thermostatics.

He is currently working on the link between sensorimotor performance and neural synchronization using neuro-physiologically motivated stochastic neural models, bifurcation theory, and graph theory. This includes several PhD and Research Master projects involving both experimental approaches and theoretical ideas, also to investigate the interplay of dynamical and stochastic aspects of complex neural networks.



6th REHAB MOVE
Congress

Groningen
The Netherlands
December 12-14, 2018
www.rehabmove2018.com

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The banner features a blue background on the left with white text. On the right, there is a photograph of a person in a black athletic top and white gloves, possibly a tennis player, in motion. The text is overlaid on the image.