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Multi-scale modelling of human sleep

Sleep is a complex dynamic process, regulated both by “long time” circadian and homeostatic rhythms and the alternance between Rapid Eyes Movement (REM) and non REM (NREM) sleep and by the occurrence of peculiar “short-time” transient Electro Encephalo Graphics (EEG) events, namely Transient Synchronized EEG Patterns (TSEP), which are thought to be expression of synchronous cortical neuron discharges and are supposed to play the main role in the building-up of NREM sleep and flexible adaptation against perturbations. Our study aims at collecting, analyzing and modeling the time series of TSEP related to the achievement, maintenance and interruption of NREM sleep, in physiological conditions.