

# Extreme model reduction in neuroscience: Principles before Realism

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Activity in cortical networks is generally considered to be governed by oscillatory dynamics, enabling the network components to synchronize their phase. Dynamics on networks are determined to a large extent by the network topology. Cortical network topology, however, is subject to change as a result of development and plasticity. Adaptive network models enable the dynamics on networks to shape the dynamics *of* networks, i.e. the evolution of the network topology. Adaptive networks show a strong propensity to evolve complex topologies. In adaptive networks, the connections are reinforced or rewired, in adaptation to the dynamical properties of the nodes. The latter are called *adaptively rewiring networks*. I will discuss the adaptive network model developed in our laboratory, most recently in collaboration with the Mathematical Modelling Centre at the University of Leicester, as an extremely simplified model of the developing human brain.