

# Analysis of steady states, bifurcations and periodic solutions to study epileptiform activity in a lumped model of the neocortex

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A lumped model of neuronal activity in the neocortex is presented to study the onset of synchronized epileptiform activity. The model consists of two non-linear delay differential equations with two fixed delays. The model's bifurcations of the steady states are studied analytically and the periodic solutions starting at some of these bifurcations are analyzed numerically. Large collections of bifurcations, periodic solutions and multi-stability are identified.