Quantitative Biology > Neurons and Cognition

Triggering up states in all-to-all coupled neurons

Hong-Viet V. Ngo, Jan Köhler, Jörg Mayer, Jens Christian Claussen, Heinz Georg Schuster

(Submitted on 10 Mar 2010)

Slow-wave sleep in mammalians is characterized by a change of large-scale cortical activity currently paraphrased as cortical Up/Down states. A recent experiment demonstrated a bistable collective behaviour in ferret slices, with the remarkable property that the Up states can be switched on and off with pulses, or excitations, of same polarity; whereby the effect of the second pulse significantly depends on the time interval between the pulses. Here we present a simple time discrete model of a neural network that exhibits this type of behaviour, as well as quantitatively reproduces the time-dependence found in the experiments.

Comments:	epl Europhysics Letters, accepted (2010)
Subjects:	**Neurons and Cognition (q-bio.NC)**; Statistical Mechanics (cond-mat.stat-mech); Chaotic Dynamics (nlin.CD); Biological Physics (physics.bio-ph)
Cite as:	**arXiv:1003.2111v1 [q-bio.NC]**

Submission history

From: Jens Christian Claussen [view email]
[v1] Wed, 10 Mar 2010 13:50:57 GMT (45kb)

Which authors of this paper are endorsers?