Search or Article-id

All papers | Go!

Nonlinear Sciences > Adaptation and Self-Organizing Systems

Structure and control of self-sustained target waves in excitable small-world networks

Yu Qian, Xiaodong Huang, Gang Hu, Xuhong Liao

(Submitted on 16 Jan 2010)

Small-world networks describe many important practical systems among which neural networks consisting of excitable nodes are the most typical ones. In this paper we study self-sustained oscillations of target waves in excitable small-world networks. A novel dominant phase-advanced driving (DPAD) method, which is generally applicable for analyzing all oscillatory complex networks consisting of nonoscillatory nodes, is proposed to reveal the self-organized structures supporting this type of oscillations. The DPAD method explicitly explores the oscillation sources and wave propagation paths of the systems, which are otherwise deeply hidden in the complicated patterns of randomly distributed target groups. Based on the understanding of the self-organized structure, the oscillatory patterns can be controlled with extremely high efficiency.

Comments:	16 pages 5 figures
Subjects:	**Adaptation and Self-Organizing Systems (nlin.AO)**; Pattern Formation and Solitons (nlin.PS)
Cite as:	**arXiv:1001.2816v1 [nlin.AO]**

Submission history

Which authors of this paper are endorsers?

Download:

- PDF
- PostScript
- Other formats

Current browse context:
nlin.AO
< prev | next >
new | recent | 1001

Change to browse by:

nlin
    nlin.PS

References & Citations

- CiteBase

Bookmark(what is this?)

 CiteULike logo

 Connotea logo

 BibSonomy logo

 Mendeley logo

 Facebook logo

 del.icio.us logo

 Digg logo   Reddit logo

Link back to: arXiv, form interface, contact.