

MIMS/CMMA Seminar on Self - Organization

第19回 自己組織化セミナー

2016年5月17日(火) 16:30~17:30

明治大学中野キャンパス 6階 研究セミナー室3

Pulse Generators

Yasumasa Nishiura

WPI Advanced Institute for Materials Research, Tohoku University

Abstract:

Heterogeneity is one of the most important and ubiquitous types of external perturbations. We study a spontaneous pulse-generating mechanism in an excitable medium with jump-type heterogeneity. Such a pulse generator (PG) has attracted considerable interest due to the computational potential of pulse waves in physiological signal processing. We first investigate the conditions for the onset of robust-type PGs, and then we show the global bifurcation structure of heterogeneity-induced patterns, including the complex ordered sequence of pulse-generating manners. We devise numerical frameworks to trace the long-term behavior of PGs as periodic solutions, and we detect the associated terminal homoclinic orbits that are homoclinic to a special type of heterogeneity-induced ordered pattern with a hyperbolic saddle. These numerical approaches assist us in identifying a candidate for the organizing center, and producing a variety of PGs as a codimension-two gluing bifurcation in which two homoclinic trajectories associated with pulse emission and breathing motions form a butterfly configuration.

・中野キャンパスへのアクセス

JR中央線快速・総武線、東京メトロ東西線／中野駅 下車 北口より徒歩約8分

詳しくは、http://www.meiji.ac.jp/koho/campus_guide/nakano/access.html

世話人: 三村昌泰(明治大学)、小田切健太(専修大学)、組織委員: 池田幸太、上山大信、小川知之、末松 J. 信彦
連絡先: mimura.masayasu@gmail.com