

# **Oscillation Sources and Signal Propagation Paths in Excitable Complex Networks**

Gang Hu

*Department of Physics, Beijing Normal University, China*

Excitable dynamics is popular in natural and social systems, in particular, neurons are typical excitable cells. Practically, excitable units often interact with each other, forming various complex networks (like neural networks). On the other hand, different types of oscillations often exist in excitable networks, sometimes performing important practical functions. Oscillatory patterns of excitable complex networks may be very complicated when the networks under study have large size and complicated interaction structures. And the organizations in the networks supporting oscillatory dynamics and pattern formations may be deeply hidden in huge measurable data. We proposed a method of dominant phase advanced driving (DPAD) to analyze the complicated data. By applying this method we are able to depict the driving relations between nodes of complex networks, explore oscillation sources and pursue signal propagations from the sources throughout the networks. With the above understandings we can conveniently regulate network dynamics on purpose by controlling few key nodes and interactions.