Collective behaviors of dynamical networks are on the focus of intense research in various fields of science. Dynamical networks can be considered as populations of locally interacting nonlinear systems in which complex spatiotemporal patterns can emerge. For instance, one of such emerging patterns is the synchronization, which refers to the strongest form of network cooperative dynamics. Each individual in the network tends to share the common rhythms and the same dynamical behavior in the synchronization state. Emerging the traveling and propagating waves, especially spiral waves, is another example of fascinating collective behaviors of dynamical networks. The other important example is associated with coexisting of both incoherent and coherent states in networks, simultaneously, which is called chimera state.

Various studies in the literature have investigated the emergence of collective behavior in dynamical networks numerically and analytically. Generally, they have pointed out three main factors on the emergence of collective behaviors: the dynamics of individual system in each node, the coupling strength, and the topology of the network. There are various types of complex nonlinear systems that can be located in each node of networks, such as systems expressed by ordinary differential or difference equations, fractional-order systems, and statistical systems. Finding the proper coupling strength as an important factor which regulates the interactions in dynamical networks is another important point in this field of research. The structure of a network can also affect the functions of emerging the collective behaviors. The dynamical networks can be identical or non-identical, weighted or unweighted, directed or undirected, time-varying or fixed in various types of topologies such as regular, random, scale-free, small-world, etc.
In this special issue, the main focus is to investigate the collective behaviors of the dynamical networks, which is the key factor to reach more accurate network models as well as enrich our knowledge about the function of the natural networks. Therefore, we plan to review the current state of the art about collective behaviors of nonlinear dynamical networks and point out the directions of further studies. This special issue mostly welcomes researchers all over the world to discuss their investigations and recent advances in this field. Potential topics of this special issue include, but are not limited to

- Models of dynamical networks
- Structural network properties and analysis
- Resilience indicators of complex networks
- Multilayer and multiplex networks
- Consensus network analysis
- Network formation
- Synchronization in networks
- Explosive synchronization
- Chimera states in networks
- Wave Propagation in networks
- Spiral waves in networks
- Applications of synchronization and control of chaos in engineering

**Important Dates:**

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<td>December 31, 2020</td>
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<td>Publication Date</td>
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Along with the manuscript submission, the corresponding author has to send a cover letter specifying that the submission is for Special Issue on “Collective Behavior in Nonlinear Dynamical Networks.”