Structure Identification of Fractional-order Complex-variable Network With Complex Coupling

Mingcong Zhou

Jiangxi Normal University

Zhaoyan Wu (✉ zhywu@jxnu.edu.cn)

Jiangxi Normal University <https://orcid.org/0000-0002-9589-1728>

Research Article

Keywords: Structure identification, Fractional-order, Complex-variable network, Complex coupling

Posted Date: March 11th, 2021

DOI: <https://doi.org/10.21203/rs.3.rs-221279/v1>

License: This work is licensed under a Creative Commons Attribution 4.0 International License.

[Read Full License](#)

Abstract

Fractional-order complex-variable dynamical network with complex coupling is considered in this paper. The topological structures and system parameters are assumed to be unknown. As we know, the topological structure and system parameters play a key role on the dynamical behavior of complex network. Thus, how to effectively identify them is a critical issue for better studying the network. Through designing proper controllers and updating laws, two corresponding network estimators are constructed. Based on the Lyapunov function method and Gronwall-Bellman integral inequality, the results are analytically derived. Finally, two numerical examples are performed to illustrate the feasibility of the theoretical results.

Full Text

This preprint is available for [download as a PDF](#).

Figures

Figure 1

please see the manuscript file for the full caption

Figure 2

please see the manuscript file for the full caption

Figure 3

please see the manuscript file for the full caption

Figure 4

please see the manuscript file for the full caption

Figure 5

please see the manuscript file for the full caption

Figure 6

please see the manuscript file for the full caption

Figure 7

please see the manuscript file for the full caption