

Accepted Manuscript

Lagrange α -exponential stability and α -exponential convergence for fractional-order complex-valued neural networks

Jigui Jian, Peng Wan

PII: S0893-6080(17)30067-9

DOI: <http://dx.doi.org/10.1016/j.neunet.2017.03.011>

Reference: NN 3737

To appear in: *Neural Networks*

Received date: 2 September 2016

Revised date: 15 February 2017

Accepted date: 27 March 2017

Please cite this article as: Jian, J., & Wan, P. Lagrange α -exponential stability and α -exponential convergence for fractional-order complex-valued neural networks. *Neural Networks* (2017), <http://dx.doi.org/10.1016/j.neunet.2017.03.011>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



Lagrange α -exponential stability and α -exponential convergence for fractional-order complex-valued neural networks

Jigui Jian*, Peng Wan

†

*College of Science, China Three Gorges University,
Yichang, Hubei, 443002, China.*

Abstract

This paper deals with the problem on Lagrange α -exponential stability and α -exponential convergence for a class of fractional-order complex-valued neural networks. To this end, some new fractional-order differential inequalities are established, which improve and generalize previously known criteria. By using the new inequalities and coupling with the Lyapunov method, some effective criteria are derived to guarantee Lagrange α -exponential stability and α -exponential convergence of the addressed network. Moreover, the framework of the α -exponential convergence ball is also given, where the convergence rate is related to the parameters and the order of differential of the system. These results here, which the existence and uniqueness of the equilibrium points need not to be considered, generalize and improve the earlier publications and can be applied to monostable and multistable fractional-order complex-valued neural networks. Finally, one example with numerical simulations is given to show the effectiveness of the obtained results.

Keywords: Fractional-order; Complex-valued neural network; Lagrange α -exponential stability; α -exponential convergence; Fractional-order differential inequality.

*Corresponding author. Tel./fax: +86 0717 6392370.

†E-mail addresses: *jiguijian@ctgu.edu.cn(J.G. Jian), 1543541596@qq.com(P. Wan).

Download English Version:

<https://daneshyari.com/en/article/4946680>

Download Persian Version:

<https://daneshyari.com/article/4946680>

[Daneshyari.com](https://daneshyari.com)