

Accepted Manuscript

Global asymptotic stability of impulsive fractional-order complex-valued neural networks with time delay

Limin Wang, Qiankun Song, Yurong Liu, Zhenjiang Zhao, Fuad E. Alsaadi

PII: S0925-2312(17)30470-8
DOI: [10.1016/j.neucom.2017.02.086](https://doi.org/10.1016/j.neucom.2017.02.086)
Reference: NEUCOM 18220

To appear in: *Neurocomputing*

Received date: 20 December 2016
Revised date: 2 February 2017
Accepted date: 27 February 2017

Please cite this article as: Limin Wang, Qiankun Song, Yurong Liu, Zhenjiang Zhao, Fuad E. Alsaadi, Global asymptotic stability of impulsive fractional-order complex-valued neural networks with time delay, *Neurocomputing* (2017), doi: [10.1016/j.neucom.2017.02.086](https://doi.org/10.1016/j.neucom.2017.02.086)



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.

Global asymptotic stability of impulsive fractional-order complex-valued neural networks with time delay

Limin Wang¹, Qiankun Song^{2,*}, Yurong Liu^{3,4}, Zhenjiang Zhao⁵, Fuad E. Alsaadi⁴

¹School of Information Science and Engineering, Chongqing Jiaotong University, Chongqing 400074, China

²Department of Mathematics, Chongqing Jiaotong University, Chongqing 400074, China

³Department of Mathematics, Yangzhou University, Yangzhou 225002, China

⁴Communication Systems and Networks (CSN) Research Group, Faculty of Engineering, King Abdulaziz University, Jeddah 21589, Saudi Arabia

⁵Department of Mathematics, Huzhou University, Huzhou 313000, China

Abstract

In this paper, global asymptotic stability of impulsive fractional-order complex-valued neural networks with time delay is considered. By employing contraction mapping principle, comparison theorem and inequality scaling skills, several sufficient conditions to ensure the existence, uniqueness and global asymptotic stability of the equilibrium point for the considered neural networks are established. A numerical example illustrates the validity and feasibility of the obtained result.

Keywords: Fractional-order complex-valued neural networks; Equilibrium point; Impulsive effects; Global asymptotic stability

I. INTRODUCTION

The development history of the theory of fractional calculus has more than three hundred years [1]. As an extension of the integer-order calculus, the fractional calculus has its unique advantages, such as merits of memory and hereditary properties [2]. Since practical problems are described more accurately by fractional-order derivatives than integer-order derivatives, so that they are valuable in various fields of science and engineering [3]. In the past decades, stability analysis of various classes of neural networks has been extensively investigated since they have been successfully applied to some practical engineering problems such as signal processing, pattern classification, associative memory design and control and optimization. Recently, several integer-order calculus systems such as neural networks, stochastic nonlinear systems, systems with linear equality constraints, discrete time-varying systems have been investigated [4]- [14]. Some researchers applied fractional calculus on neural networks and put forward fractional-order neural networks (FNNs) [15]. Many results about dynamic behaviors of FNNs have been discussed, such as stability analysis, synchronization analysis, chaos and hyperchaos, for example, see [16]- [24], and the references therein.

*E-mail address of author: qiankunsong@163.com (Q. Song)

متن کامل مقاله

دریافت فوری ←

ISIArticles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات