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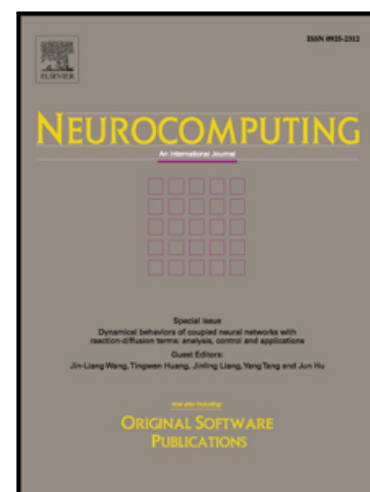
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The global exponential pseudo almost periodic synchronization of quaternion-valued cellular neural networks with time-varying delays*

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Abstract

In this paper, we consider the problem of the pseudo almost periodic synchronization of quaternion-valued cellular neural networks (QVCNNs) with time-varying delays. Firstly, we use the Banach fixed point theorem to obtain the existence of pseudo almost periodic solutions of QVCNNs with time varying delays. Then, by designing a novel and very general nonlinear state-feedback controller, and constructing suitable Lyapunov functions, we obtain that the drive-response structure of QVCNNs with pseudo almost periodic coefficients can realize the global exponential synchronization. Our results are completely new. Finally, a numerical example is given to illustrate the feasibility of our results.

Key words: Pseudo almost periodic solution; Global exponential synchronization; Quaternion-valued neural network; Time delay.

1 Introduction

Synchronization is an extensive phenomenon in the real systems, which means that two or more systems adjust each other to result in a common dynamical behavior. By synchronization, we can understand an unknown system from the well-known systems. So it has played

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