

Global exponential stability of a nonautonomous Hopfield neural network model with distributed delays

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Abstract

In this seminar, we consider the following general nonautonomous Hopfield neural network model with distributed delays,

$$x'_i(t) = -b_i(t, x_i(t)) + \sum_{k=1}^K \sum_j^n g_{ijk}(t, x_{jt}), \quad t \geq 0, \quad i = 1, \dots, n. \quad (1)$$

where b_i are positive continuous and g_{ijk} are Lipschitz on the second variable. We establish sufficient conditions for the global exponential stability of the system (1). This system includes most of the delayed models of neural networks of Hopfield type with time-varying coefficients and distributed delays. For these models, we establish sufficient conditions for their global exponential stability. The existence and global exponential stability of a periodic solution is also addressed.

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