

Global stability for delayed neural network models

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Abstract

In this talk, we establish sufficient conditions for the existence and global asymptotic stability of an equilibrium point of the following neural network model with distributed delays

$$\dot{x}_i(t) = -\rho_i(x_i(t)) \left[b_i(x_i(t)) + \sum_{j=1}^n f_{ij}(x_{j,t}) \right], \quad i = 1, \dots, n, \quad (1)$$

by assuming the existence of instantaneous negative feedbacks which dominate the delay effect. The global exponential stability of the equilibrium is also addressed.

Some examples of neural network models, such as, Hopfield, Cohen-Grossberg, bidirectional associative memory, and static with S-type distributed delays are presented.

References

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