

Applied Dynamical Systems Seminar

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Traveling Waves For Cellular Neural Networks With Delays

Abstract:

In this report, we study the existence, uniqueness and stability of Traveling waves for cellular neural networks with delays. Firstly, we obtain the existence of traveling waves for delayed CNNs with monotone output functions by combining Schauder's fixed point theorem and upper-lower solution's technique. Secondly, for non-monotone function, the existence of traveling waves for CNNs with delays is still obtained by constructing two nondecreasing function and squeezing the non-monotonic output functions with the help of the known results of the monotone case. Thirdly, by establishing the *a priori* asymptotic behavior of traveling waves and applying Ikehara's theorem, we prove the uniqueness (up to translation) of traveling wave. Lastly, by the weighted energy method together with the squeezing technique, we further show the global stability of all non-critical traveling waves.