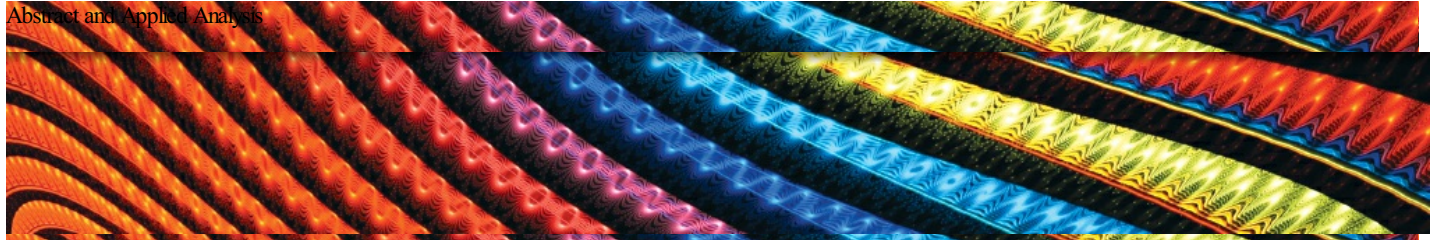


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Research Article

Exponential Stability of Impulsive Delayed Reaction-Diffusion Cellular Neural Networks via Poincaré Integral Inequality

Linked References

1. L. O. Chua and L. Yang, "Cellular neural networks: theory," *IEEE Transactions on Circuits and Systems*, vol. 35, no. 10, pp. 1257–1272, 1988. [View at Publisher](#) · [View at Google Scholar](#) · [View at MathSciNet](#)
2. L. O. Chua and L. Yang, "Cellular neural networks: applications," *IEEE Transactions on Circuits and Systems*, vol. 35, no. 10, pp. 1273–1290, 1988. [View at Publisher](#) · [View at Google Scholar](#) · [View at MathSciNet](#)
3. J. Cao, "New results concerning exponential stability and periodic solutions of delayed cellular neural networks," *Physics Letters A*, vol. 307, no. 2-3, pp. 136–147, 2003. [View at Publisher](#) · [View at Google Scholar](#) · [View at MathSciNet](#)
4. J. Cao, "On stability of cellular neural networks with delay," *IEEE Transactions on Circuits and Systems I*, vol. 40, pp. 157–165, 1993. [View at Google Scholar](#)
5. P. P. Civalleri and M. Gilli, "A set of stability criteria for delayed cellular neural networks," *IEEE Transactions on Circuits and Systems. I. Fundamental Theory and Applications*, vol. 48, no. 4, pp. 494–498, 2001. [View at Publisher](#) · [View at Google Scholar](#) · [View at MathSciNet](#)
6. J. J. Hopfield, "Neurons with graded response have collective computational properties like those of two-state neurons," *Proceedings of the National Academy of Sciences of the United States of America*, vol. 81, pp. 3088–3092, 1984. [View at Google Scholar](#)
7. J. Yan and J. Shen, "Impulsive stabilization of functional-differential equations by Lyapunov-Razumikhin functions," *Nonlinear Analysis. Theory, Methods & Applications*, vol. 37, no. 2, pp. 245–255, 1999. [View at Publisher](#) · [View at Google Scholar](#) · [View at MathSciNet](#)
8. X. Z. Liu and Q. Wang, "Impulsive stabilization of high-order Hopfield-type neural networks with time-varying delays," *IEEE Transactions on Neural Networks*, vol. 19, pp. 71–79, 2008. [View at Google Scholar](#)
9. X. Z. Liu, "Stability results for impulsive differential systems with applications to population growth models," *Dynamics and Stability of Systems*, vol. 9, no. 2, pp. 163–174, 1994. [View at Google Scholar](#) · [View at MathSciNet](#)
10. S. Arik and V. Tavsanoglu, "On the global asymptotic stability of delayed cellular neural networks," *IEEE Transactions on Circuits and Systems. I. Fundamental Theory and Applications*, vol. 47, no. 4, pp. 571–574, 2000. [View at Publisher](#) · [View at Google Scholar](#) · [View at MathSciNet](#)
11. L. O. Chua and T. Roska, "Stability of a class of nonreciprocal cellular neural networks," *IEEE Transactions on Circuits and Systems I*, vol. 37, pp. 1520–1527, 1990. [View at Google Scholar](#)
12. Z. H. Guan and G. Chen, "On delayed impulsive Hopfield neural networks," *Neural Network*, vol. 12, pp. 273–280, 1999. [View at Google Scholar](#)
13. Q. Zhang, X. Wei, and J. Xu, "On global exponential stability of delayed cellular neural networks with time-varying delays," *Applied Mathematics and Computation*, vol. 162, no. 2, pp. 679–686, 2005. [View at Publisher](#) · [View at Google Scholar](#) · [View at MathSciNet](#)
14. D. D. Bañov and P. S. Simionov, *Systems with Impulse Effect*, Ellis Horwood, Chichester, UK, 1989. [View at MathSciNet](#)
15. I. M. Stamova, *Stability Analysis of Impulsive Functional Differential Equations*, Walter de Gruyter, Berlin, Germany, 2009.
16. M. A. Arbib, *Brains, Machines, and Mathematics*, Springer, New York, NY, USA, 1987. [View at Publisher](#) · [View at Google Scholar](#) · [View at MathSciNet](#)
17. S. Haykin, *Neural Networks: A Comprehensive Foundation*, Prentice-Hall, Englewood Cliffs, NJ, USA, 1998.
18. H. Akça, R. Alassar, V. Covachev, Z. Covacheva, and E. Al-Zahrani, "Continuous-time additive Hopfield-type neural networks with impulses," *Journal of Mathematical Analysis and Applications*, vol. 290, no. 2, pp. 436–451, 2004. [View at Publisher](#) · [View at Google Scholar](#) · [View at MathSciNet](#)
19. G. T. Stamov, "Almost periodic models of impulsive Hopfield neural networks," *Journal of Mathematics of Kyoto University*, vol. 49, no. 1, pp. 57–67, 2009. [View at Google Scholar](#) · [View at MathSciNet](#)
20. G. T. Stamov and I. M. Stamova, "Almost periodic solutions for impulsive neural networks with delay," *Applied Mathematical Modelling*, vol. 31, pp. 1263–1270, 2007. [View at Google Scholar](#)
21. S. Ahmad and I. M. Stamova, "Global exponential stability for impulsive cellular neural networks with time-varying delays," *Nonlinear Analysis. Theory, Methods & Applications*, vol. 69, no. 3, pp. 786–795, 2008. [View at Publisher](#) · [View at Google Scholar](#) · [View at MathSciNet](#)
22. X. Liu and K. L. Teo, "Exponential stability of impulsive high-order Hopfield-type neural networks with time-varying delays," *IEEE Transactions on Neural Networks*, vol. 16, pp. 1329–1339, 2005. [View at Google Scholar](#)
23. Y. Zhang and Q. Luo, "Global exponential stability of impulsive cellular neural networks with time-varying delays via fixed point theory," *Advances in Difference Equations*, vol. 2013, article 23, 2013. [View at Publisher](#) · [View at Google Scholar](#)
24. Y. Zhang and M. Zhang, "Stability analysis for impulsive reaction-diffusion Cohen-Grossberg neural networks with time-varying delays," *Journal of Nanjing University of Information Science and Technology*, vol. 4, no. 3, pp. 213–219, 2012. [View at Google Scholar](#)
25. X. Zhang, S. Wu, and K. Li, "Delay-dependent exponential stability for impulsive Cohen-Grossberg neural networks with time-varying delays and reaction-diffusion terms," *Communications in Nonlinear Science and Numerical Simulation*, vol. 16, no. 3, pp. 1524–1532, 2011. [View at Publisher](#) · [View at Google Scholar](#) · [View at MathSciNet](#)
26. J. Pan and S. Zhong, "Dynamical behaviors of impulsive reaction-diffusion Cohen-Grossberg neural network with delay," *Neurocomputing*, vol. 73, pp. 1344–1351, 2010. [View at Google Scholar](#)
27. K. Li and Q. Song, "Exponential stability of impulsive Cohen-Grossberg neural networks with time-varying delays and reaction-diffusion terms," *Neurocomputing*, vol. 72, pp. 231–240, 2008. [View at Google Scholar](#)
28. J. Qiu, "Exponential stability of impulsive neural networks with time-varying delays and reaction-diffusion terms," *Neurocomputing*, vol. 70, pp. 1102–1108, 2007. [View at Google Scholar](#)
29. X. Wang and D. Xu, "Global exponential stability of impulsive fuzzy cellular neural networks with mixed delays and reaction-diffusion terms," *Chaos, Solitons & Fractals*, vol. 42, no. 5, pp. 2713–2721, 2009. [View at Publisher](#) · [View at Google Scholar](#) · [View at MathSciNet](#)
30. W. Zhu, "Global exponential stability of impulsive reaction-diffusion equation with variable delays," *Applied Mathematics and Computation*, vol. 205, no. 1, pp. 362–369, 2008. [View at Publisher](#) · [View at Google Scholar](#) · [View at MathSciNet](#)
31. Z. Li and K. Li, "Stability analysis of impulsive Cohen-Grossberg neural networks with distributed delays and reaction-diffusion terms," *Applied Mathematical Modelling*, vol. 33, no. 3, pp. 1337–1348, 2009. [View at Publisher](#) · [View at Google Scholar](#) · [View at MathSciNet](#)
32. Z. Li and K. Li, "Stability analysis of impulsive fuzzy cellular neural networks with distributed delays and reaction-diffusion terms," *Chaos, Solitons and Fractals*, vol. 42, no. 1, pp. 492–499, 2009. [View at Publisher](#) · [View at Google Scholar](#) · [View at MathSciNet](#)
33. J. Pan, X. Liu, and S. Zhong, "Stability criteria for impulsive reaction-diffusion Cohen-Grossberg neural networks with time-varying delays," *Mathematical and Computer Modelling*, vol. 51, no. 9-10, pp. 1037–1050, 2010. [View at Publisher](#) · [View at Google Scholar](#) · [View at MathSciNet](#)

- 34. Y. Zhang and Q. Luo, "Novel stability criteria for impulsive delayed reaction-diffusion Cohen-Grossberg neural networks via Hardy-Poincaré inequality," *Chaos, Solitons & Fractals*, vol. 45, no. 8, pp. 1033–1040, 2012. [View at Publisher](#) · [View at Google Scholar](#) · [View at MathSciNet](#)
- 35. Y. Zhang and Q. Luo, "Global exponential stability of impulsive delayed reaction-diffusion neural networks via Hardy-Poincaré Inequality," *Neurocomputing*, vol. 83, pp. 198–204, 2012. [View at Google Scholar](#)
- 36. Y. Zhang, "Asymptotic stability of impulsive reaction-diffusion cellular neural networks with time-varying delays," *Journal of Applied Mathematics*, vol. 2012, Article ID 501891, 17 pages, 2012. [View at Publisher](#) · [View at Google Scholar](#) · [View at MathSciNet](#)
- 37. V. Lakshmikantham, D. D. Bainov, and P. S. Simeonov, *Theory of Impulsive Differential Equations*, World Scientific, Singapore, 1989. [View at MathSciNet](#)
- 38. W.-S. Cheung, "Some new Poincaré-type inequalities," *Bulletin of the Australian Mathematical Society*, vol. 63, no. 2, pp. 321–327, 2001. [View at Publisher](#) · [View at Google Scholar](#) · [View at MathSciNet](#)