Approximation of Solutions of Fractional-Order Delayed Cellular Neural Network on [0,?)

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 In this paper, we study a class of fractional-order cellular neural network containing delay. We prove the existence and uniqueness of the equilibrium solution followed by boundedness. Based on the theory of fractional calculus, we approximate the solution of the corresponding neural network model over the interval [0 , ?) using discretization method with piecewise constant arguments and variation of constants formula for fractional differential equations. Furthermore, we conclude that the solution of the fractional-delayed system can be approximated for large t by the solution of the equation with piecewise constant arguments, if the corresponding linear system is exponentially stable. At the end, we give two numerical examples to validate our theoretical findings.