

Period two solution for a class of distributed delay differential equations

Yukihiko Nakata

Department of Mathematical Sciences, Aoyama Gakuin University, Japan
ynakata@math.aoyama.ac.jp

Abstract: We consider a periodic solution for a class of distributed delay differential equations. A period two solution for distributed delay differential equations, where the period is twice the maximum delay, is shown to satisfy a Hamiltonian system of ordinary differential equations, from which we can construct the period two solution for the distributed delay differential equation. The idea is based on Kaplan and Yorke (1974, JMAA) for a discrete delay differential equation. We present distributed delay differential equations that have periodic solutions expressed in terms of the Jacobi elliptic functions.