

Symmetry, Hopf bifurcation and the emergence of cluster solutions in time delayed neural networks

Sue Ann Campbell¹ and Zhen Wang¹

¹*Department of Applied Mathematics, University of Waterloo, Canada
(e-mail: sacampbell@uwaterloo.ca, zhen.wang@uwaterloo.ca)*

We consider networks of N identical oscillators with time delayed, global circulant coupling, modeled by a system of delay differential equations with Z_N symmetry. We first study the existence of Hopf bifurcations induced by coupling time delay, and then use symmetric Hopf bifurcation theory to determine how these bifurcations lead to different patterns of symmetric cluster oscillations.