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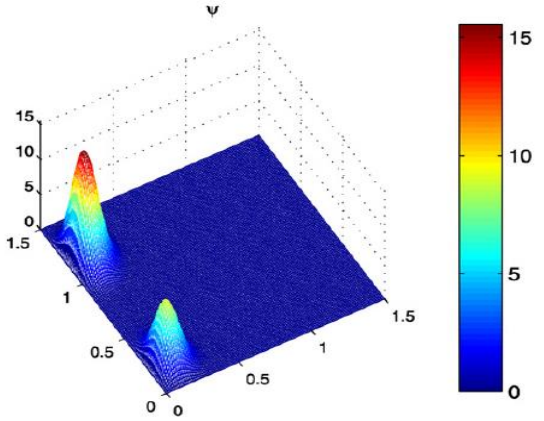
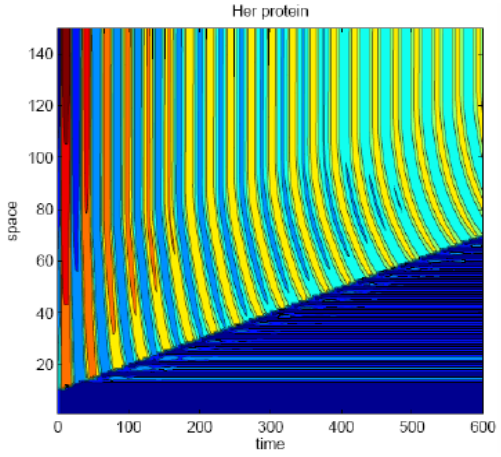
Prof. Chih-Wen Shih / Department of Applied Mathematics

Dynamical systems, Differential equations, Mathematical biology

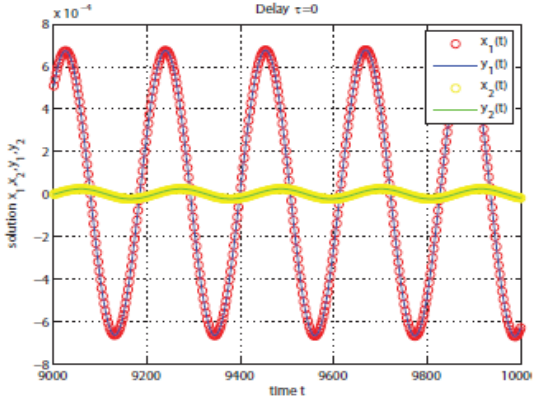
We are interested in developing mathematical methodologies to investigate nonlinear dynamical systems. The systems of particular interest are some mathematical models about biological processes or phenomena, including the ones on cell differentiation, somitogenesis, gene regulation, neuronal systems, and competitive species under dispersal. Mathematical analysis on the collective behaviors of these coupled cells or coupled systems enhances the understanding of these models. The other research interest is mathematical theory in neural networks.



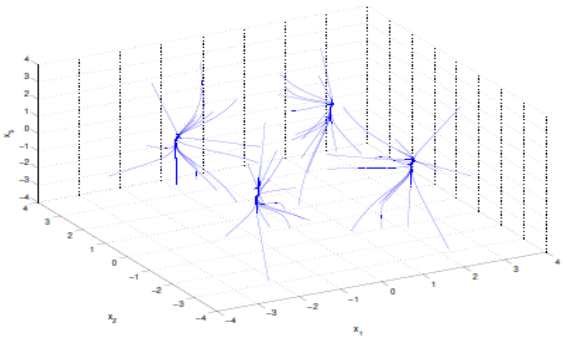
T-cell differentiation



Traveling wave patterns for somitogenesis of zebrafish



Synchronization for coupled FitzHugh-Nagumo systems



Multistability in neural networks