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Physics Colloquium Series - Fall 2016

"Reaction-diffusion Waves: From Migraine Auras to Forest Fires"

Abstract: Excitation waves are propagating spatiotemporal structures observed in many biological, chemical, and physical systems. They can be described as a reaction-diffusion (RD) wave in which an autocatalytic reaction zone propagates via diffusion without mass transport. Examples of RD waves are the propagation of an action potential in a nerve, the spread of electrical depolarization waves on the heart surface (responsible for the heart beat) or the visual cortex (responsible for migraine auras), the (human spectator) stadium wave, or a forest fire.

All RD systems can be described with one set of nonlinear differential equations and experimentally investigated with, for example, a chemical tabletop model system, the Belousov-Zhabotinsky reaction.

I will give an overview of this research field and present ongoing projects in the Wave Lab at the College of Wooster.

Friday, October 21, 2016 - 3:10 p.m.
Franklin Miller, Jr. Lecture Hall (RBH 109)
Reception to follow.