

Cornell Dynamical Systems Seminar

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*A slow-fast analysis of the Györgyi and Field models of
the Belousov-Zhabotinsky reaction*

With the discovery of the BZ reaction by Boris Belousov in the early 1950's, the field of chemical oscillators was born. In this work, I'll present a brief history of the BZ reaction, and how the is modeled dynamically in both closed systems and continuously-stirred tank reactors (CSTR). Based on a new understanding of the inorganic chemistry involved in the oscillations, Györgyi and Field derived a family of models to describe the reaction in 1991. We present a slow-fast analysis of two four-dimensional systems. In particular, we show how the phenomenon of delayed Hopf bifurcation shapes the dynamics of the mixed-mode oscillations found in the system.

Friday, November 5, 2010, 2:15 pm, in 205 Malott Hall