

Title: Mixed Mode Oscillations

Abstract:

Time series display mixed mode oscillations (MMOs) when there are alternations between two distinct magnitudes of oscillations. MMOs have been studied most extensively for chemical reactors, where there were a large number of both experimental and theoretical investigations that began over thirty years ago. Recent interest in the phenomenon has been stimulated by investigations of neuronal models. My ongoing work with Mathieu Desroches, Bernd Krauskopf, Christian Kuehn, Hinke Osinga and Martin Wechselberger seeks to classify mechanisms in multiple time scale dynamical systems that produce MMOs. In our work, the small amplitude oscillations occur at transitions between slow and fast segments of a trajectory and result from the interactions of the two time scales. The lecture will show examples, discuss three mechanisms and differences in the characteristics of the MMOs they produce.