

Pacific Institute *for the*
Mathematical Sciences

PIMS Alberta Distinguished Lecture *Edgar Knobloch (UC, Berkeley)*

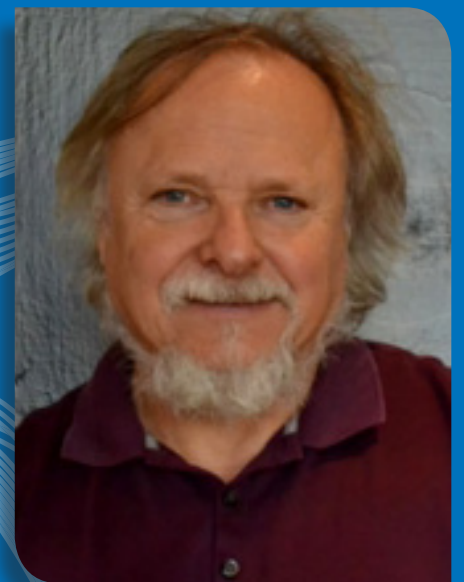
March 26, 2015

3:30 pm

Room CAB 281

The University of Alberta

SPATIALLY LOCALIZED STRUCTURES: EXPERIMENTS, THEORY AND NUMERICS



Spatially localized structures arise frequently in nature. Examples include localized buckling, spot-like structures in optics and in reaction-diffusion models, vortices in fluid dynamics, as well as localized oscillations known as oscillons. In all these cases such structures are the result of nonlinear self-localization. In this lecture I will show examples of such structures from a variety of physical systems, describe ideas from spatial dynamics that help us understand the origin of these structures in terms of homoclinic snaking (mathematical explanation) or selfpinning of fronts (physics explanation), and illustrate the predictions using both model problems such as the Swift-Hohenberg equation and 'real' systems such as convection or shear flow described by the equations of fluid mechanics.

WEBSITE: <http://www.pims.math.ca/scientific-event/150326-padlek>