

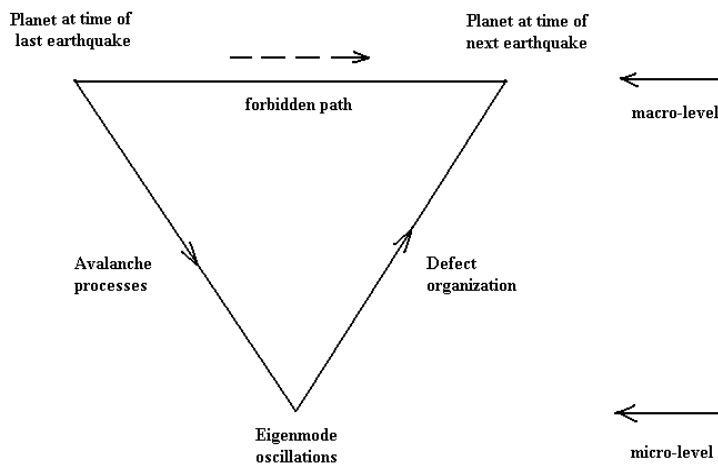
Physics Seminar

Wednesday 3/31/2010, 4:30 pm
Science & Engineering Building Auditorium

Randall D. Peters

Department of Physics
Mercer University

The Complex Interface between Stable and Critical State Dynamics



Self organized criticality (SOC) is now a well-established concept, beginning with the work of Per Bak and co-workers in the 1980s. It has been used to describe some properties of a variety of complex phenomena, such as earthquakes. Experiments by the speaker suggest that a system approaching catastrophe does so through chaotic transitions involving alternating states of critical and stable type.

In the context of SOC, Bak and Sneppen published a paper in 1993 titled "Punctuated equilibrium and criticality in a simple model of evolution" (Phys. Rev. Lett. 71, 4083). In this seminar evidence will be provided for the speaker's belief that the term 'punctuated equilibrium' may be, at least for the description of some systems, too 'weak' a description. A recent experiment provides evidence for the 'stronger' expression of 'organized stability', operating at the mesoscale. Because of the considerable importance of metal fatigue to engineering practice, it is high time that more of the physics community pay serious attention to some of these issues that relate to internal friction.

Please join us for light refreshments at 4:15pm outside SEB 203.