

Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Earthquake Models in the Natural Time Domain JOHN RUNDLE,
JAMES HOLLIDAY, University of California, Davis — Earthquake dynamics are difficult to understand using conventional (“calendar”) time, a result of the strong clustering of events in the system. The instability associated with nucleation and growth of slip has been viewed in various models as a type of avalanche phenomenon, similar to a sandpile. As each site fails, or topples, stress is both reduced and transferred to other sites within the range of interaction. For this reason, the slip events occur in short bursts, widely separated in calendar time. However, if time is counted in event numbers (natural time), events become regularly spaced in time and are easier to analyze. The difficulty, of course, lies in constructing the inverse mapping of natural time to calendar time. Nevertheless, the natural time domain offers significant analytical advantages. In this talk, we discuss methods and problems for earthquake dynamics and forecasting in the natural time domain. We also discuss forecast verification and validation using standard methods adapted from weather and financial forecasting.

John Rundle
University of California, Davis

Date submitted: 18 Nov 2009

Electronic form version 1.4