

## Complexity of seismic cycles due to nonuniformity of friction parameters: A numerical simulation

# Naoyuki Kato[1]

[1] ERI, Univ. Tokyo

A numerical simulation of seismic cycles on a 2D planar fault is performed to understand the effect of nonuniformity in friction parameters and/or stresses on seismic cycles. A rate- and state-dependent friction law is assumed for friction and 2D FFT is used for efficiently calculating stresses due to slip on the fault. A region with negative  $a-b$  (velocity weakening), large  $s_n$  (normal stress), or large  $L$  (characteristic slip distance) may be asperity, where seismic slip events repeatedly take place. Postseismic aseismic sliding propagates in positive  $a-b$  (velocity strengthening) regions around the asperity. Complicated and realistic seismic cycles may be reproduced by taking appropriate values of friction parameters and normal stress on the fault.