

Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

State selection in the noisy stabilized Kuramoto-Sivashinsky equation DINA OBEID, J. MICHAEL KOSTERLITZ, Dept. Physics, Brown University, Providence, RI, BJÖRN SANDSTEBE, Division Applied Mathematics, Brown University, Providence, RI — We investigate the stability of stationary patterns in out of equilibrium dissipative systems in the presence of stochastic noise, choosing the stabilized Kuramoto-Sivashinsky (SKS) equation with white Gaussian distributed noise. The SKS equation is one of the simplest equations with the essential ingredients of non linearity and having a band of stable periodic states. Numerical simulations indicate that the noise selects one of these states as being the most stable. This is consistent with an analysis of the phase-diffusion constants of the periodic states of the deterministic version where one of the states is more stable than the rest. We speculate that this is a mechanism of selecting a unique state by stochastic noise.

Dina Obeid
Dept. Physics, Brown University, Providence, RI

Date submitted: 12 Nov 2009

Electronic form version 1.4