Abstract Submitted
for the DPP06 Meeting of
The American Physical Society

Stochastic model of the Rayleigh-Taylor turbulent mixing[1] M. CAJUN, SNEZHANA I. ABARZHI, FLASH Center, The University of Chicago, SERGEI FEDOTOV, The University of Manchester, UK, LEO P. KADANOFF, FLASH Center, The University of Chicago — We propose a stochastic model, which describes the random character of the Rayleigh-Taylor turbulent mixing. Fluctuations of the rate of momentum loss are accounted for through multiplicative noise with uniform and log-normal distributions. We show that the mixing growth-rate (so-called "alpha," alpha = h/gt^2) is extremely sensitive to the stochastic effects and long tails of the distributions. The ratio between the rates of momentum loss and momentum gain as well as the rates of energy dissipation and energy gain is the statistic invariant and a robust parameter to diagnose for either sustained or time-dependent acceleration.

[1]The work was supported by NRL and DOE.

Snezhana I. Abarzhi
FLASH Center, The University of Chicago

Date submitted: 24 Jul 2006 Electronic form version 1.4