Meeting: 1001, Evanston, Illinois, SS 4A, Special Session on Fluid Dynamics, Diffusion and Reaction

1001-35-173 **Jack Xin*** (jxin@math.utexas.edu), Department of Mathematics, University of Texas, Austin, TX 78712-025. *A variational principle based study of KPP front speeds in random shear flows.*

The ensemble of KPP minimal front speeds through random shear flows in channel domains is studied by a variational principle. A formula of ensemble averaged speed is then shown. The variational principle allows fast and accurate computation of the speeds. The ensemble averaged speeds obey quadratic (linear) enhancement laws in the small (large) root mean square regimes of shear flows. Speed enhancement distributions, and dependence on shear covariance as well as channel widths will also be demonstrated. This is joint work with Jim Nolen. (Received August 24, 2004)