

Date: September 12th

Time: 11:00 AM

Location: Ames 234

Speaker: Dr. Misha Chertkov
Los Alamos National Laboratory

Title: "Phenomenology of Rayleigh-Taylor Turbulence"

Abstract

We analyze the advanced mixing regime of the Rayleigh-Taylor (RT) incompressible turbulence in the small Atwood number Boussinesq approximation. The prime focus of our phenomenological approach is to resolve the temporal behavior and the small scale spatial correlations of velocity and temperature fields inside the mixing zone, which grows as $\propto t^2$. We show that the 5/3-Kolmogorov scenario for velocity and temperature spectra is realized in three spatial dimensions with the viscous and dissipative scales decreasing in time, $\propto t^{-1/4}$. The Bolgiano-Obukhov scenario is shown to be valid in two dimensions with the viscous and dissipative scales growing, $\propto t^{1/8}$.