

**Meeting:** 1001, Evanston, Illinois, SS 14A, Special Session on Nonlinear Waves

1001-78-375      **Pavel M Lushnikov\*** (Pavel.M.Lushnikov.1@nd.edu), Department of Mathematics, 255 Hurley Hall, Notre Dame, IN 46556. *Forward stimulated Brillouin scattering instability of a spatially and temporally incoherent laser beam.*

Spatial and temporal incoherence of laser beam is used to suppress self-focusing in experiments on inertial confinement fusion. We found a convective instability due to collective forward stimulated Brillouin scattering, which couples the beam to transversely propagating low frequency ion acoustic waves. Instability controls the transition between statistical equilibrium and non-equilibrium (unstable) self-focusing regimes of beam propagation. Instability can result in strong self-focusing even for very short beam correlation time. The stability boundary may be used as a comprehensive guide for inertial confinement fusion designs. Well into the stable regime, an analytic expression for the angular diffusion coefficient is obtained, which provides an essential correction to a geometric optic approximation for beam propagation. (Received August 31, 2004)