1016-76-284 **Michael Chertkov***, T-13, Theoretical Division, Los Alamos National Laboratory, MS B213, Los Alamos, NM 87545, and **Igor Kolokolov** and **Vladimir Lebedev**. *Effects of surface tension on immiscible Rayleigh-Taylor turbulence.*

We present phenomenology describing the internal structure of a turbulent zone, produced as the result of the push of a heavy fluid into a light one, for the case of immiscible fluids. One finds that the Kolmogorov cascade is realized within a range that grows with time, viz., scales between the mixing zone width, $L \propto t^2$, and the viscous scale, $\eta \propto t^{-1/4}$. Surface tension effects lead to formation of an emulsion-like state. Density fluctuations on scales larger than the typical drop size, l, are governed by the Obukhov-Corrsin cascade. If $l \gg \eta$, a wave energy cascade, related to capillary waves propagating along the surfaces of drops, is formed at scales below l, $l \propto t^{-2/5}$. (Received February 14, 2006)