Hot plasmas with strong temperature gradients in inertial confinement fusion (ICF) experiments are examined for ion acoustic instabilities and kinetic effects produced by electron heat flux. In particular, return current instability (RCI) and its nonlinear evolution have been considered as the source of stationary ion acoustic turbulence (IAT). Given the spectra of IAT two mechanisms of anomalous laser light absorption: due to enhanced anomalous collisionality and by mode conversion into Langmuir waves at the critical density are described and applied to hohlraum plasmas at $\frac{ZT_e}{T_i} \gg 1$.

Anomalous absorption and effective heat flux limiter due to IAT are included into the reduced model of RCI that is incorporated into hydro simulations. Such a model is verified by kinetic simulations and experimental Thomson scattering measurements in Au plasma.

Detailed studies of hot, inhomogeneous and stable ($ZT_e/T_i \sim O(1)$) plasmas by means of Fokker-Planck simulations revealed electron non-Maxwellian distribution functions modified by thermal flux. Linear plasma response is described under such conditions with emphasis on Landau damping of electron plasma waves and density fluctuations. Implications of all these processes for laser plasma interaction experiments are described and discussed.