NONCLASSICAL EFFECTS IN ICF PLASMA

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Last decade ICF (inertial confined fusion) studies, especially at NIF facility, have explicitly shown the importance of kinetic effects in such a plasma. These effects are not fully studied yet. The absence of recent progress at NIF requires the return back from complex simulation of hohlraum and thermonuclear target common dynamics to consistent analysis of separate physical effects. For each new effect an adequate model should be build, determining its role for ICF plasma dynamics and indicating the difference from standard hydrodynamic approach. In this paper we present results of numerical and theoretical study for several new effects:

1. Kinetic heat wave propagation relevant to different absorption models,
2. Ion species separation at the shock wave front in plasma,
3. Radiative heat transport instability,

that could play an important role for ICF targets dynamics. Experiments for studying these effects are also discussed. The work is partly supported by RFBR grant 16-02-00088а.