Abstract Submitted
for the DPP16 Meeting of
The American Physical Society

Anomalous absorption of laser light on ion acoustic fluctuations
WOJCIECH ROZMUS, Department of Physics, University of Alberta, Edmonton, Alberta, Canada, VALERY YU. BYCHENKOV, P. N. Lebedev Physics Institute, Russian Academy of Sciences, Moscow, Russia — Theory of laser light absorption due to ion acoustic turbulence (IAT) is discussed in high Z plasmas where ion acoustic waves are weakly damped. Our theory applies to the whole density range from underdense to critical density plasmas. It includes an absorption rate for the resonance anomalous absorption due to linear conversion of electromagnetic waves into electron plasma oscillations by the IAT near the critical density in addition to the absorption coefficient due to enhanced effective electron collisionality. IAT is driven by large electron heat flux through the return current instability. Stationary spectra of IAT are given by weak plasma turbulence theory and applied in description of the anomalous absorption in the inertial confinement fusion plasmas at the gold walls of a hohlraum. This absorption is anisotropic in nature due to IAT angular anisotropy and differs for p- and s-polarization of the laser radiation. Possible experiments which could identify the resonance anomalous absorption in a laser heated plasma are discussed.

Wojciech Rozmus
University of Alberta

Date submitted: 12 Jul 2016 Electronic form version 1.4