

PROPAGATION OF A SOLITARY EXTRAORDINARY WAVE ACROSS AN EXTERNAL MAGNETIC FIELD IN A PLASMA

V.B. Krasovitskiy¹, V.A.Turikov², and V.I.Sotnikov³

¹ *Keldish Institute of Applied Mathematics, RAS, Moscow, Russia,* ²
University of Peoples Friendship, Moscow, Russia, ³ *University of Nevada*
at Reno, USA

The efficiency of electron acceleration by a short powerful laser pulse propagating across an external magnetic field is investigated. Conditions for the decay of a laser pulse with frequency close to the upper hybrid resonance frequency are analyzed. It is also shown that a laser pulse propagating as an extraordinary wave in cold, magnetized, low density plasma takes the form of a nonlinear wave with the modulated amplitude (envelope soliton). Finally, simulation results on the interaction of an electromagnetic pulse with a semi-infinite plasma, obtained with the help of an electromagnetic, relativistic PIC code are discussed and a comparison with the obtained theoretical results is presented.