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This book consists of the abstracts of plenary, oral and poster contributions to the XXXII International Conference on Interaction of Intense Energy Fluxes with Matter (March 1–6, 2017, Elbrus, Kabardino-Balkaria, Russia). The reports deal with the contemporary investigations in the field of physics of extreme states of matter. The conference topics are as follows: interaction of intense laser, x-ray and microwave radiation, powerful ion and electron beams with matter; techniques of intense energy fluxes generation; experimental methods of diagnostics of ultrafast processes; shock waves, detonation and combustion physics; equations of state and constitutive equations for matter at high pressures and temperatures; low-temperature plasma physics; physical issues of power engineering and technology aspects.

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Calculation of the ion stopping in a dense plasma by the Monte Carlo method

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The calculation of thermonuclear target parameters for heavy ion inertial fusion requires adequate quantitative description of processes of heavy ion interaction with a dense plasma in a wide range of parameters. Therefore, in order to know the properties of the dense plasma under different conditions, the most attractive way is a computer experiment, which provides answers to many important questions necessary for the use of inertial confinement fusion dense plasma at energy issues. In this paper, Monte Carlo method for simulation of ions trajectories in a dense plasma of inertial connement fusion is presented. The main advantage of the calculation by the Monte Carlo method is that it allows you to take into account any physical process directly. For example, local and non-local inelastic energy losses, bound energy between atoms replacing collision and so on. The calculation of characteristics of Ti, Fe, Xe ions beam in targets of H, D, T, D–T mixture, Be, Cu are carried out. The result of computer simulation are numerical data on the dynamic characteristics, such as energy loss, penetration depth, the eective range of the particles, stopping and straggling. Also, according to the results of the work was created program of the 3D visualization of the ion trajectories in a dense plasma of inertial connement fusion. This research was funded under the target program SRW No. 0115PK01011 “Development of informational-program package for modeling and visualization of dense plasma properties in inertial connement fusion for 2015–2017” from the Ministry of Education and Science of the Republic of Kazakhstan.