Abstract for an Invited Paper
for the SHOCK09 Meeting of
The American Physical Society

Shock Waves and High-Energy-Density States of Matter in the GSI FAIR Team Project[1]

VLADIMIR FORTOV, Russian Academy of Science

Knowledge of basic physical properties of matter under extreme conditions of high energy density, such as equation-of-state, static and dynamic electrical conductivity and opacity is of fundamental importance for various branches of basic and applied physics. Intense beams of energetic heavy ions provide a unique capability for heating macroscopic volumes of matter fairly uniformly and generating by this way high-density and highentropy states. This new approach permits to explore fascinating areas of the phase diagram that are difficult to access by other means. In this report we discuss various physics and technical issues of the high-energy-density physics research with intense heavy ions beams that is being performed at GSI, as well as that is to be carried out at the future Facility for Antiproton and Ion Research (FAIR) in Darmstadt.

[1]In collaboration with V. Mintsev, RAS; B. Sharkov, ITEP; D.H.H. Hoffmann, TU Darmstadt; and D. Varensov, GSI.