

Status of High Energy Density Physics at GSI

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Abstract

A detailed understanding of interaction phenomena of intense ion- and laser radiation with matter is important for a large number of applications in different fields of science, from basic research of plasma properties to application in energy science. Energy loss processes of heavy ions in plasma and cold matter are important for the generation of high energy density states in general and especially in the hot dense plasma of an inertial fusion target. Of special interest are phase transitions and the associated time scales when matter passes the warm dense matter regime of the phase diagram at high density but relatively low temperature. We present an overview on recent results and developments of beam plasma, and beam matter interaction processes studied with heavy ion beams from the GSI accelerator facilities.