

Stimulated Mach configuration generated by intense heavy ion beam as a scheme for investigation of high energy density matter

Shutov A V

Institute of Problems of Chemical Physics of the Russian Academy of Sciences,
Academician Semenov Avenue 1, Chernogolovka, Moscow Region 142432,
Russia

shutov@fcp.ac.ru

In frames of HED@FAIR collaboration for experimental study high-energy-density (HED) matter in extreme state created by intense heavy ion beam were proposed schemes LAPLAS and HIHEX. Another scheme Stimulated Mach Configuration (SMAC) proposed here is based on generation of Mach configurations of shock waves in targets by intense heavy ion beam. The advantages of the scheme are: effective utilization of the beam power (energy deposition in Bregg peak location is used); an existence behind Mach stem of Mach wave HED matter region with practically 1D hydrodynamic motion suitable for experimental research. Results of numerical simulations of hydrogen compression in LAPLAS and SMAC schemes are compared.