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Laboratory astrophysics based on pulse power and intense beams

Kazuhiko Horioka^{1*}

¹Tokyo Institute of Technology

Recent research activities are presented relevant to laboratory astrophysics based on fast electromagnetic pulse devices and intense ion beams. Dense plasmas driven by pulse power devices and/or intense ion beams are discussed concerning researches on warm dense matter physics. A warm dense plasma was produced using pulse power driven exploding discharges in water and also in semi-rigid vessel. Intense plasma shock waves were produced in electro-magnetically driven shock tube. A pulse-power assisted and ion-beam heated, quasi-statically tamped target has been proposed to make a well defined warm dense state for study on the equation of state of hydrogen.

Keywords: high energy density plasma, shock wave, high pressure physics, pulse power, ion beam