

Studies on Heavy Ion Fusion and High Energy Density Physics in Japan

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In this paper Japanese research activities are summarized and presented in heavy ion fusion (HIF) and high energy density physics (HEDP). Heavy ion beam (HIB) is a prominent tool to study HEDP and HIF, and HIBs may be a promising inertial fusion driver. HIB accelerators have been studied intensively for a long time; a HIB pulse profile, a particle energy and a HIB quality are controllable. A HIB energy deposition profile is also well-defined, and a HIB energy is deposited inside a material. By focusing and using the HIB excellent properties, Japanese HIF and HEDP activities have covered a wide variety of subjects ranging from new accelerators to future HIF studies: laser-initiated ion source, new inductive accelerator, beam physics, beam bunching, beam instabilities, HIB interactions with gas or materials, laser ion acceleration, HIB transport, HIB-based warm dense (WD) state generation, new measurement of HED or WD matters, HIB stopping power, atomic physics, multi-HIBs illumination on a target, HIF target implosion, impact ignition scheme, HIB-radiation conversion, radiation confinement and transport in HED matter or in HIF, and so on..