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Mitigation of laser imprinting with diamond ablator for direct-drive inertial confinement fusion targets KEISUKE SHIGEMORI, HIROKI KATO, MITSUO NAKAI, YOICHIRO HIRONAKA, Institute of Laser Engineering, Osaka University, TATSUHIRO SAKAIYA, Graduate School of Science, Osaka University, HIDEO NAGATOMO, Institute of Laser Engineering, Osaka University, ATSUSHI SUNAHARA, Institute for Laser Technology, SHINSUKE FUJIOKA, HIROSHI AZECHI, Institute of Laser Engineering, Osaka University, KATSUYA SHIMIZU, KYOKUGEN, Center for Quantum Science and Technology under Extreme Conditions, Osaka University — Diamond is very hard material, and uncompressible under its elastic limit ($\sim$ 180 GPa), which means that diamond has a very large effective specific heat ratio. Since the imprint efficiency is a function of the specific heat of the target material, diamond is a promising candidate for the ablator material. We carried out an experiment to measure the target imprinting on diamond foils. The thickness of the diamond foils were 8-15 μm. We also irradiated polystyrene foils as a reference in order to compare the imprint level. The intensity modulation was imposed for the foot pulse with the wavelength on the target of $\sim$ 100 μ m. The intensity of the foot pulse was $\sim$ 5 x 10^{12} W/cm^2 followed by the main pulse ($\sim$ 1 x 10^{14} W/cm^2) to accelerate the foil. Areal density perturbation was measured with face-on backlighting technique. The imprint amplitude was evaluated by measuring areal density perturbation which is amplified by Rayleigh-Taylor instability while the target is accelerated after the target imprinting with a foot pulse.

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