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Study of Direct-Drive-targets stability by varying pulse shapes, filling pressure and ablator thickness on the OMEGA laser facility FREDERIC GIRARD, VERONIQUE TASSIN, FRANCK PHILIPPE, CHARLES REVERDIN, OLIVIER LANDOAS, TONY CAILLAUD, STEPAHEN LAFFITE, GUILLAUME LEGAY, CEA, TOMLINE MICHEL, WOLF SEKA, CHRISTIAN STOECKL, VLADIMIR GLEBOV, FRED MARSHALL, LLE — In the context of imploding capsules studies, X-ray heating from laser irradiated hohlraum produces implosions showing that the understanding via simulations of the hydrodynamics (bang times) and performances (neutron yields) are difficult because the discrepancies with experimental results are important. In the experiments presented here, we studied targets stability in the Direct-Drive heating scheme by varying pulse shapes, filling pressure, ablator thickness and laser energy (non-uniform irradiation). The main objectives have been to get bang-times and neutron yields measurements, neutron images of the imploding core on the OMEGA laser facility. X-ray images have been obtained for the first time on the same axis and lead to direct comparison of the size and location of the X-ray and neutron hot spots. Precise measurements of bang times, X-ray spectra and soft X-ray images from temporally gated imaging systems give large set of data to validate simulations and assess how predictable are the different experimental configurations of implosion.

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