

Abstract Submitted
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Shock ignition targets: gain and robustness vs ignition threshold factor¹ STEFANO ATZENI, LUCA ANTONELLI, ANGELO SCHIAVI, SILVIA PICONE², GIAN MARCO VOLPONI³, Dipartimento SBAI, Universita' di Roma "La Sapienza", Italy, ALBERTO MAROCCHINO, LNF, INFN, Frascati, Italy — Shock ignition [1] is a laser direct-drive inertial confinement fusion scheme, in which the stages of compression and hot spot formation are partly separated. The hot spot is created at the end of the implosion by a converging shock driven by a final “spike” of the laser pulse. Several shock-ignition target concepts have been proposed and relevant gain curves computed (see, e. g. [2]). Here, we consider both pure-DT targets and more facility-relevant targets with plastic ablator. The investigation is conducted with 1D and 2D hydrodynamic simulations. We determine ignition threshold factors ITF's (and their dependence on laser pulse parameters) by means of 1D simulations [3]. 2D simulations indicate that robustness to long-scale perturbations increases with ITF. Gain curves (gain vs laser energy), for different ITF's, are generated using 1D simulations. [1] R. Betti et al., Phys. Rev. Lett. 98, 155001 (2007). [2] S. Atzeni et al., Nucl. Fusion 54, 054008 (2014). [3] S. Atzeni, A. Marocchino, A. Schiavi, Plasma Phys. Controll. Fusion 57, 014022 (2015).

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