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Capsule optimization techniques for Fast Ignition* MAX TABAK, STEPHEN HATCHETT, BRUCE LANGDON, Lawrence Livermore National Laboratory, MARK HERRMANN, Sandia National Laboratory, Albuquerque — The general Fast Ignition scheme is well-known. Here we discuss two optimization techniques. In addition we will discuss strategies to "sneak up" on ignition with available drivers.The commonly discussed ignition method for Fast Ignition where heat is directly injected into the hotspot requires ∼5 times the hotspot energy as that associated with conventional implosions. This occurs because the fuel explodes during the run-up to ignition, wasting ignition energy on bulk fluid motion while the fuel density drops. We explore "exploding pusher" ignition schemes where a second implosion is driven by the injected energy. Early studies have shown that such a reimplosion can reduce the required ignition energy below the Atzeni scaling. Typical short pulse lasers deliver 20-30% of their energy in a spot a few times the diffraction limit with the rest delivered in a spot 5-10 times that diameter. Survival of the final optic in energy applications will lead to large standoff requirements, large f/#'s and hence spots. We describe the design of non-imaging collectors that can concentrate the incident laser light under a variety of scattering assumptions for a variety of incident illumination choices. *This work was performed under the auspices of the U.S. Department of Energy by the University of California Lawrence Livermore National Laboratory under contract No. W-7405-Eng-48.

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