AN ESSENTIALLY ROUND CAPSULE IMPLOSION; RECENT RESULTS FROM THE TWO-SHOCK, NEAR-VACUUM HOHLRAUM, PLASTIC CAPSULE IMPLOSION EXPERIMENTAL PLATFROM ON NIF

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We report on progress of a new high energy density indirect drive capsule implosion platform. In particular, through a sequence of tuning shots we have repeatably produced a nearly round ($P_2/P_0 \sim M_2/M_0 \sim 2\%$) X-ray stagnation hotspot. This achievement allows us to study a variety of hot-spot phenomena, including mix due to roughness inscribed on the inner surface of the ablator, as well as varying hot-spot convergence as a function of gas fill density. The platform consists of a relatively small, ~1700 micron outer diameter, and thick, ~200 microns, uniformly Silicon doped, gas-filled plastic capsule that is driven inside a standard size 5750 micron diameter ignition hohlraum. The hohlraum fill is near vacuum to reduce back-scatter and improve laser/drive coupling. A two-shock pulse of about 1 MJ of laser energy drives the capsule. The thick capsule insulates the imploding core from perturbations fed-through from the ablation front. Compared to a NIF ignition experiment, this is a relatively simple, low laser energy framework. Recent experimental results using this platform will be discussed.