Implosion of indirectly driven reentrant cone shell target

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Abstract. We have examined the implosion of an indirectly driven reentrant-cone shell target to clarify the issues attendant on compressing fuel for a fast ignition target. The target design is roughly hydrodynamic equivalent to a NIF cryo-ignition target, but scaled down to be driven by Omega. A sequence of backlit x-radiographs recorded each implosion. The collapse was also modeled with LASNEX, generating simulated radiographs. We compare experimental and simulated diameter, density and symmetry as functions of time near stagnation. The simulations were generally in good agreement with the experiments with respect to the shell, but did not show the opacity due to ablation of gold off the cone; non-thermal gold M-line radiation from the hohlraum wall penetrates the shell and drives this ablation causing some Au to mix into the low density center of the core and into the region between the core and cone. This might be a problem in a cryo-ignition target.