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Design of NIF ignition hohlraum with high-density carbon capsule[1] OGDEN S. JONES, DARWIN D. HO, DEBRA A. CALLAHAN, DENISE E. HINKEL, NATHAN B. MEEZAN, JOSE L. MILOVICH, STEPHEN M. POLLAINE, LAURANCE J. SUTER, Lawrence Livermore National Laboratory — The current baseline NIF ignition target uses a cryogenic DT capsule with a doped beryllium ablator. An alternative design we are investigating uses a high-density carbon ablator instead. A high-density carbon ablator might have some fabrication advantages and it will absorb more x-ray energy than a beryllium capsule of the same size. Changing the ablator material also will change the plasma conditions inside the hohlraum and thus the laser plasma interaction. We report on calculations using HYDRA that were done to find the combination of hohlraum geometry, laser power, laser pointing, and inner cone to outer cone laser power fractions that resulted in a symmetric implosion giving substantial fusion yield. This work included an assessment of the sensitivity of the symmetry to various design parameters and estimates of the linear gain for laser plasma instabilities.

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Ogden Jones
Lawrence Livermore National Laboratory

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