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NIF Ignition Target with High-Density Carbon (HDC) Ablator[1]
DARWIN HO, STEVEN HAAN, JAY SALMONSON, LORIN BENEDICT, JUERGEN BIENER, Lawrence Livermore National Laboratory, MARK HERRMANN, Sandia National Laboratory — High-density carbon as an NIF ignition capsule ablator material has several advantages including a very smooth surface finish and small grain structure. Recent Omega experiments[2] show that if the first shock in the ablator is higher than about 6.5 Mbar, which is in the liquid/solid 2-phase region of the carbon phase diagram, then the shock uniformity becomes comparable to that of the Be ablator. Consequently, this is the strength that we adopt for the first shock in our latest HDC capsule design. Using various scanning techniques, the capsule configuration and drive temperature profile are optimized. We describe the 1-D margin and 2-D stability behavior of the optimized point design.

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[2]P. M. Celliers private communication

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