

Abstract Submitted
for the DPP05 Meeting of
The American Physical Society

Phase Contrast Imaging of Inertial Confinement Fusion Capsules Using a Compact X-pinch¹ B. DEBONO, Z. KARIM, K. WAQSCHAL, F.N. BEG, UCSD, R.B. STEPHENS, General Atomics — The baseline NIF cryo-ignition fusion target contains a 100 μm thick layer of DT ice inside a cu-doped Be shell. X-ray phase contrast radiography is currently the only known method for verifying the presence and uniformity of this ice layer, but presently available sources require minutes-long exposure, which results in a blurred image due to shell vibrations. A compact x-pinch generator is an excellent source of bright and energetic x-rays, and has the unique advantage of pulsed exposure (<1 ns) while being small enough to fit on a tabletop. Initial results from experiments performed to characterize Be coated, Al coated, and plain CH capsules (various diameters and wall thicknesses) are presented. A compact x-pinch device capable of producing 80 kA of current with a rise time of 40 ns was used. X-pinchs of various wire materials including W, Mo, and Al were used. The rough spectrum with Ross filter pairs shows x-rays in 1-10 keV range. The phase contrast images of CH capsules reveal a source size of 2-3 μm .

¹Supported by US DOE National Undergraduate Fusion Fellowship, DE-AC03-01SF22260, and DE-AC02-76CH03073

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Date submitted: 22 Jul 2005

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