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FROM THE NATIONAL IGNITION FACILITY

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ANALYSIS OF DOWNSCATTERED NEUTRON IMAGES FROM THE NATIONAL IGNITION FACILITY

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Controlling fuel compression is one of the key elements for accomplishing ignition in inertial confinement fusion (ICF) experiments. Thus, cold fuel areal density measurements are one of the primary analysis topics in these experiments. By using two camera systems, gated with adjustable timings, the neutron imaging system at the National Ignition Facility (NIF), Lawrence Livermore National Laboratory, Livermore, CA, can image the primary neutrons and pre-selected fraction of the down-scattered neutrons from ICF implosions. We will present reconstructed intensity profiles of the hot fusion core and the cold fuel region surrounding it, as well as the inferred downscattered ratio of the neutron yields from these regions, and the status of studies to relate these ratios to the cold fuel areal density.

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