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Indications of Bulk-Fluid Motion in Direct-Drive Implosions O.M. MANNION, K.S. ANDERSON, C.J. FORREST, V.YU. GLEBOV, V.N. GONCHAROV, J.P. KNAUER, P.B. RADHA, S.P. REGAN, T.C. SANGSTER, C. STOECKL, Laboratory for Laser Energetics, U. of Rochester — The neutron spectrum produced by a burning plasma encodes essential information about the fusion products and serves as an important diagnostic for inertial confinement fusion experiments. At the Omega Laser Facility, neutron time-of-flight measurements are used to interpret the first and second moment of the neutron spectrum. These moments have been shown to be directly related to properties of the plasma, such as bulk fluid motion and apparent ion temperature. New measurement devices allow for unprecedented accuracy in the measurement of these moments and will provide a better understanding of the performance of direct-drive implosions. We present measurements of the first moment of the DT and D_2 peaks in DT implosions and show that variations in the first moment indicate bulk fluid motion of the plasma. This material is based upon work supported by the Department of Energy National Nuclear Security Administration under Award Number DE-NA0001944.

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