

Abstract Submitted  
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**Results from MARBLE DT Experiments on the National Ignition Facility: Implosion of Foam-Filled Capsules for Studying Thermonuclear Burn in the Presence of Heterogeneous Mix**<sup>1</sup> T J MURPHY, M R DOUGLAS, T CARDENAS, J H COOLEY, M A GUNDERSON, B M HAINES, C E HAMILTON, Y KIM, M N LEE, J A OERTEL, R E OLSON, R B RANDOLPH, R C SHAH, J M SMIDT, Los Alamos National Laboratory — The MARBLE<sup>2</sup> campaign on NIF investigates the effect of heterogeneous mix on thermonuclear burn for comparison to a probability distribution function (PDF) burn model.<sup>3</sup> MARBLE utilizes plastic capsules filled with deuterated plastic foam and tritium gas. The ratio of DT to DD neutron yield is indicative of the degree to which the foam and the gas atomically mix. Platform development experiments have been performed to understand the behavior of the foam and of the gas separately using two types of capsule. The first experiments using deuterated foam and tritium gas have been performed. Results of these experiments, and the implications for our understanding of thermonuclear burn in heterogeneously mixed separated reactant experiments will be discussed.

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<sup>2</sup>T. J. Murphy *et al* J Phys:Conf Series **717**, 012072 (2016).

<sup>3</sup>J. R. Fincke, unpublished; J. R. Ristorcelli, Phys. Fluids 29, 020705 (2017).

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