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**High bandwidth DT reaction history measurements in inertial confinement fusion** HERMANN GEPPERT-KLEINRATH, YONGHO KIM, KEVIN D. MEANEY, HANS W. HERRMANN, NELSON M. HOFFMAN, Los Alamos National Laboratory, JORGE A. CARRERA, ANNIE L. KRITCHER, Lawrence Livermore National Laboratory, MICHAEL S. RUBERY, ALEXANDER LEATHERLAND, Atomic Weapons Establishment — Simulations of high-yield DT ice layered shots at the National Ignition Facility (NIF) are matching key measured parameters such as bang time and ion temperature. However, the DT burn width measured by the diagnostic Gamma Reaction History (GRH) are wider by ˜40% compared to simulations. The new Gas Cherenkov Detector GCD-3 with the new Pulse Dilation – Photo Multiplier Tube (PDPMT) provides increased temporal resolution compared to GRH of 10ps and gives results matching measurements by GRH. The high band width of the new detector allows for resolving the shape of the DT fusion reaction history for the first time and therefore yield a deeper understanding of evolution of the implosion experiments. The shape of the DT fusion reaction history can inform about which features are captured by simulation and where they results differ. The discrepancies between measurements and simulations need to be resolved, the physics involved understood to give a more complete picture of Inertial Confinement Fusion, and to aid in the quest for ignition.

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