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**The Light of Nuclear Fusion - Diagnosing Inertial Confinement Fusion Implosions with Gamma Rays<sup>1</sup>**

KEVIN MEANEY, YONGHO KIM, HANS HERRMANN, HERMANN GEPPERT-KLEINRATH, Los Alamos National Laboratory

Inertial confinement fusion is a nuclear fusion scheme that compresses nuclear fuel to achieve fusion conditions before the capsule rebounds and blows apart. For the last 10+ years, the world's largest laser has been used with the goal of achieving ignition – gaining high fusion yield through forming a burning hot spot, driven by energy deposited through the deuterium-tritium (DT) fusion reaction. The National Ignition Facility has not yet achieved these conditions, but significant progress have been made. One valuable source of diagnostic information is the gamma rays that each ICF implosion releases, including the DT fusion reaction's 17 MeV gamma ray which is used for the time resolved fusion reaction history. The 4.4 MeV carbon ablator gamma rays also give insight into the compression of the shell of the capsule. A review of the state and future of progress of the ICF campaign and the diagnostic information and technology that goes into the gamma ray measurements will be shared.

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