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# *Target Diagnostics Physics and Engineering for Inertial Confinement Fusion VI*

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# Contents

At its peak, a NIF inertial confinement fusion (ICF) implosion lasts about 100 trillionths of a second. The imploded fuel is a hundred millionths of a meter in diameter and as much as eight times denser than lead.Â  Target area operator Bill Board removes a neutron imager snout from a diagnostic instrument manipulator. The NIF neutron imaging system produces an image of the source distribution of the primary neutrons produced by fusion reactions and the lower energy neutrons that are downscattered in energy by the compressed fuel in an ICF capsule.Â  MRS is a critical diagnostic for measuring the aerial density and yield of imploded targets, helping researchers quantify how well the shot is approaching ignition conditions. Credit: Lawrence Livermore National Laboratory. Conference Sessions 1.Optical Diagnostics and Recording 2.X-Ray Diagnostics 3.X-Ray and Nuclear Diagnostics 4.Nuclear Diagnostics. Call for paper. Please check the above Conference Description for CFP information. Any questions, please contact the conference organizer. The contact(s) can be found on the right Contact . Inertial confinement fusion (ICF) is a type of fusion energy research that attempts to initiate nuclear fusion reactions by heating and compressing a fuel target, typically in the form of a pellet that most often contains a mixture of deuterium and tritium. Typical fuel pellets are about the size of a pinhead and contain around 10 milligrams of fuel. To compress and heat the fuel, energy is delivered to the outer layer of the target using high-energy beams of laser light, electrons or ions, although In Inertial Confinement Fusion experiment on facilities such as Laser MegaJoule (LMJ) in France and the National Ignition Facility (NIF) in the U.S.we plan to achieve the ignition of capsules by compression deuterium-tritium (DT) or a deuteriumdeuterium (DD) filled target, and thus initiate a thermonuclear burn wave. In these experiments <Ï.R> may be measured using neutrons output from the imploded capsule, like secondary and tertiary neutrons produced respectively in DD and DT targets.Â  This low Î³ sensitivity makes this concept appealing for inertial confinement fusion experiments.Â  This diagnostic can also be usefull for particle physics accelerator as safety diagnostic. Conference Presentation. This content is available for download via your institution's subscription.