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IFE/P6-12: Fast Ignition Scheme Fusion Using High-Repetition-Rate Laser

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Using a high-repetition-rate laser for the first time, we have performed a compact fast ignition experiment to initiate a fusion reaction and to clarify its dynamics.

A 4J/0.4-ns output of an LD-pumped high-rep. laser HAMA is divided into the imploding and heating beams, which are illuminated on double deuterated polystyrene foils separated by 100 μm . The heating pulses heat the imploded core, emitting X-ray radiations and yielding 1000 thermal neutrons. Once heated, the core plasma maintains a temperature of few tens eV as long as the core stagnates. The result that the heating pulse transports its energy to the core plasma, is promising for promoting the fast ignition scheme laser fusion.

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