First experimental demonstration of magnetic-field assisted fast heating of a dense plasma core

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— Fast heating of a dense plasma core by an energetic electron beam is being studied on GEKKO-LFEX laser facility. Here, we introduce a laser-driven kilo-tesla external magnetic field to guide the diverging electron beam to the dense plasma core. This involves placing a spherical target in the magnetic field, compressing it with the GEKKO-XII laser beams and then using the LFEX laser beams injected into the dense plasma to generate the electron beam which do the fast heating. Cu-Ka emission is used to visualize transport or heating processes of a dense plasma. X-ray spectrum from a highly ionized Cu ions indicates several keV of the temperature increment induced by the LFEX.

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