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A experimental study on the energy coupling efficiency from the heating laser to core plasma in the fast ignition experiment YASUNOBU ARIKAWA, TAKAHIRO NAGAI, YUKI ABE, SADAOKI KOJIMA, SHOHEI SAKATA, ZHE ZHANG, TAKAHITO IKENOUCI, SHINSUKE FUJIOKA, MITSUO NAKAI, HIROYUKI SHIRAGA, HIROAKI NISHIMURA, HIROSHI AZECHI, Institute of Laser Engineering, Osaka University, FIREX TEAM — The energy coupling efficiency from the heating laser to the core plasma was experimentally studied in the fast ignition integrated experiment. A set of physical parameters of the core plasma, such as the ion temperature, the areal density of the core plasma, and the size of the core plasma were firstly diagnosed in the GEKKO XII and LFEX. The energy spectrum of the hot electron was measured by using a series of x-ray spectrometers with the energy range from 10 keV to 30 MeV. The ion temperature of 0.84 keV from fast-heated core and 0.67 keV from un-heated core were measured. From these parameters the coupling efficiency from heating laser to the core was estimated to be 1.6 %. Furthermore the coupling efficiency to the hot electron, the electron spectrum, and areal density of the core plasma were measured simultaneously, and these values were confirmed to be consistent with each other. The detailed result will be presented in the talk.

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