Counter Implosion of 500-μm Diameter CD Shell and Fast Heating of its Core Plasma by Tailored DPSSL-Pumped Laser

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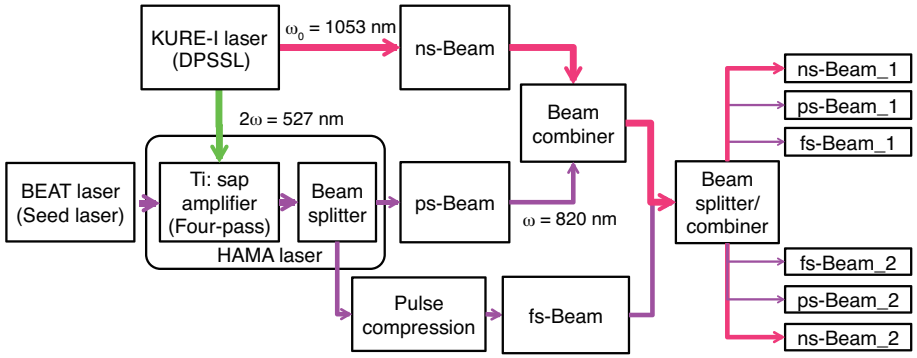
We showed for the first time a tailored pulse DPSSL to implode the CD shell-target of 500 μm in diameter and 7 μm in thickness, and its direct core heating. Laser fusion experiment of fast-ignition scheme was able to performed in our experimental scale, when combining the tailored pulse implosion beam and the direct heating beam irradiated with an optimal timing to CD shell-target.



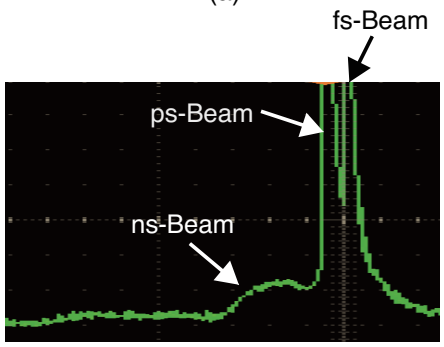
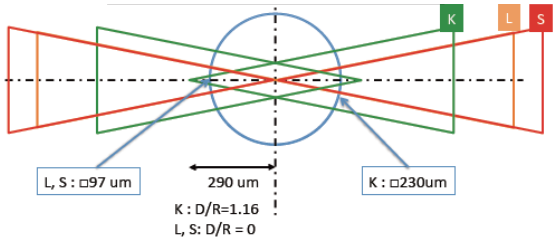


Fig.1 : (a) Block diagram of laser system. (b) Pulse shape of combined ns-Beam, ps-Beam and fs-Beam.



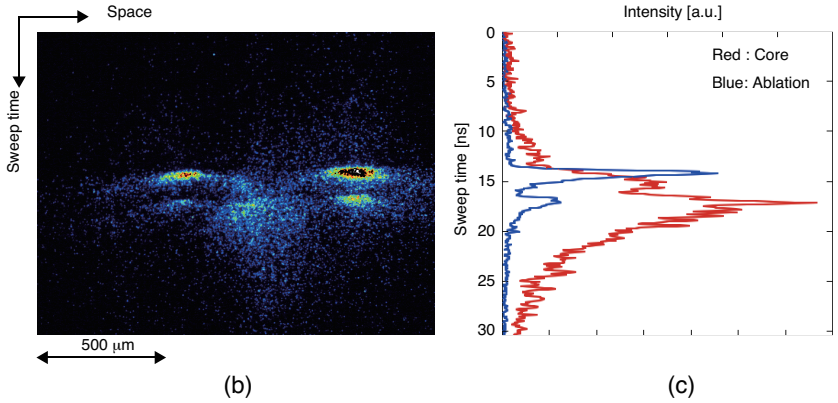


Fig. 2 : Observation results by X-ray streak camera.
(a) The counter-irradiattion beams layout on the target. (b)X-ray Streak image of irradiation with ns-Beam, ps-Beam and fs-Beam (tailored pulse implosion and direct heating). (c) X-ray emission profile of (b).