Relativistic Plasma Shutter for Ultra-Intense Laser Pulses

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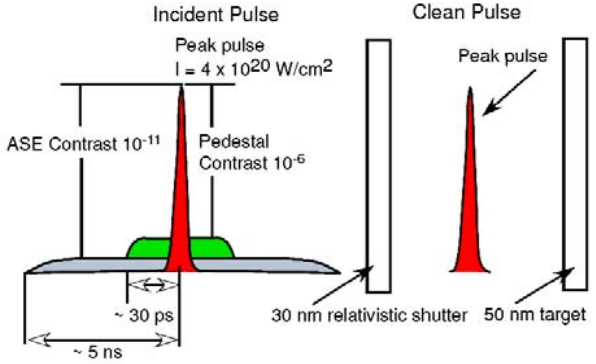
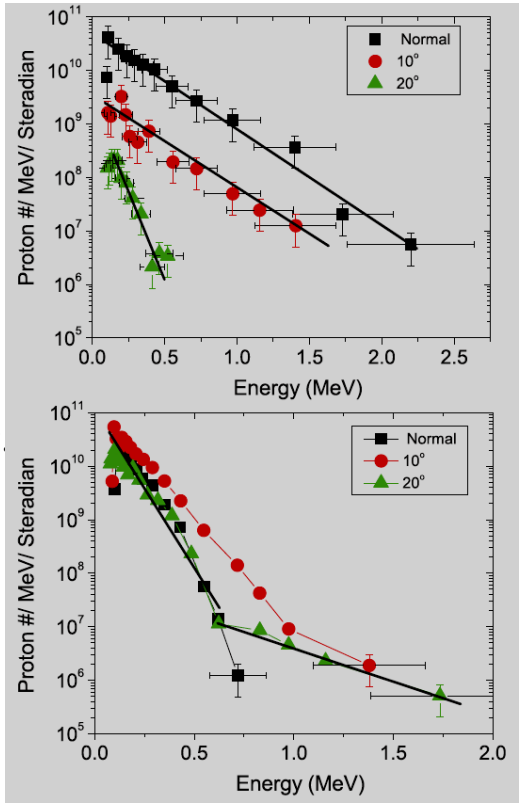
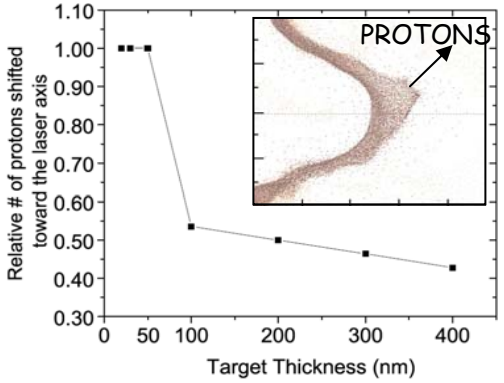


Schematic of the relativistic plasma shutter for ultra-intense laser pulses.

A relativistic plasma shutter technique is proposed and tested to remove the sub-100 ps laser pedestal allowing for proton acceleration from a high contrast, 30 TW laser interaction with 50 nm and 30 nm targets.



The proton spectrum was measured simultaneously along three different angles, for a 50 nm stand alone target and a shuttered 50 nm target. The stand alone target shows the highest energy protons are along the target normal direction, but when the shutter is inserted, the highest energy protons lie along the laser axis. This is also observed in the PIC simulations.



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