

MICRO FOCUSING OF FAST ELECTRONS WITH OPENED CONE TARGETS

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Using opened reentrant cone silicon targets, we have verified the micro focusing of the fast electrons experimentally. When laser pulse is focused tightly into the cone along the symmetrical axis, an electron beam in the direction of the laser propagation is observed. Those electrons are believed to be accelerated by the ponderomotive force. When the tightly focused laser spot is aligned to one of the side walls of the reentrant cone target, another fast electron beam emitted along the side wall is present. This is similar to the electron jets observed in the reference 1 and 2. When a line focus spot, which is long enough to irradiate both the side walls of the reentrant cone target simultaneously, is used, three electron beams are observed. The two beams emitted along the side wall directions must cross each other near the tip of the cone. We use a 2D PIC code to simulate such process and the results are in a quite agreement with the experimental results.

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2. H. Habara, K. Adumi, T. Yabuuchi et al., "Surface Acceleration of Fast Electrons with Relativistic Self-focusing in Preformed Plasma," *Physical Review Letters* 97,095004 (2006).