Electron Acceleration in Laser-Ablated Plasmas Using Ultra Short Laser Pulses


Electron wakefield acceleration was demonstrated by irradiating ablated plasmas with laser pulses from HERCULES system. A small amount of material released into vacuum from ablated plasma allows higher repetition rate operation compared with supersonic gas jets.

HERCULES Laser
30fs, 810nm
3.3x10^18 W/cm^2

YAG Laser
10ns, 1064nm,
3x10^10 W/cm^2

Collimated electron beam (no magnet)
θ ~ 2°

Teflon target

Quasi mono-energy electron beam

Electron number [Arb. unit]

Electron energy [MeV]