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Energy deposition of quasi-two temperature electrons in fast ignition scenario SEYED ABOLFAZL GHASEMI, AMIR HOSSEIN FARAHBOD, Research School of Laser and Optics — Our calculations show that, by using quasi-two temperature electrons energy distribution function and increasing electrons energy from 5 keV to 7 MeV, the ratio of beam Blooming to Straggling definitely decreases. Our analytical analysis show that for fuel mass >1 mg and for $\lambda_{if} > 0.53\ \mu m$, straggling and beam blooming increases. Meanwhile, by reducing fast ignitor wavelength from 0.53 to 0.35 micron, and for fuel mass >2 mg, electron penetration into the dense fuel slightly decreases. It is seen that for cold fuel density $\rho_c = 292$ g.cm^{-3}, as the residual electron energy increases from 5 keV to 7 MeV, the ratio of beam blooming to the mean electron penetration decreases. Therefore, reduction of scattering (blooming and straggling) of electrons and enhancement of electron penetration in the dense fuel, can be obtained in relativistic regime with high energy electrons of the order of 7 Mev and more which effectively can be used in fast-shock ignition concept.

Seyed Abolfazl Ghasemi
Research School of Laser and Optics

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