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lpaw23@tecnico.ulisboa.pt

High Efficiency Ion Acceleration from nano-scale targets reaching approaching 30 MeV/J

P.Hilz[1,2], MY.Shi [1,2], I. Salahedin [1,2], and M.Zepf[1,2,3]

[1] *Helmholtz Insitute Jena, Jena, Germany*
[2] *GSI GmbH, Darmstadt, Germany*
[3] *Institute of Optics and Quantumelectronics, University of Jena, Germany*

p.hilz@hi-jena.gsi.de

Protons and Ions have been accelerated successfully to high energies of up to 100 MeV since the first observation of the phenomenon [1]. A number of acceeleration mechanims ranging from Target Normal Sheath Acceleration ref2 over Holeboring [3], Radiation Pressure [4] and Relativistic Transparency Regimes [5] to Ion Wave Breaking citeref6 acceleration have been discussed in the literature. We focus on the relativistic transparency regime for both isolated and planar nano-scale targets. Our results demonstrate extremely high efficiency compared to previously published results with the best results approaching a laser energy dependent cut-off energy of 30MeV/J.

References

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