

Abstract Submitted
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ICF Fast Ignition with Ultra-Relativistic Electrons CLAUDE DEUTSCH, LPGP UParisXI, JEAN-PIERRE DIDELEZ, IPN UParis XI, HIGHFIS COLLABORATION — In contradistinction to the main-stream fast ignition scenario based on collisional stopping in the compressed DT-fuel of relativistic electron beams(REB) in the 1-2 Mev energy range(ER) [1], we consider an ultra-relativistic extension of the Malkin- Fisch [2] attempt at using REB in the several tenths of MeV ER, and stopping them in target through strong induced Langmuir turbulence. We stress therefore the additional and substantial contribution to REB stopping of strongly inelastic reactions such as the Trident production of electron-positron pairs as well as the many ways of electro-desintegrating deuterons and tritons, firstly in nucleons and eventually at higher energy with negative pion production included. In the latter case, it seems attractive to consider pion-catalyzed DT-fusion in a very dense and hot plasma with no sticking. This claim is supported by preliminary estimates based on Debyelike diatomic plasma orbitals.

[1] C. Deutsch, H. Furukawa, K. Mima, M. Murakami and K. Nishihara Phys.Rev.Lett. 77, 2483 (1996) and also K.V. Starikov and C. Deutsch, Phys.Plasmas 14, 022704 (2007)

[2] V.N. Malkin and N.J. Fisch, Phys.Rev.Lett. 89, 125004 (2002)

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