

Abstract Submitted
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Nuclear Physics in High Energy ICF Fast Ignition CLAUDE DEUTSCH, LPGP UParis XI, JEAN-PIERRE DIDELEZ, IPN UParis XI, HIGHFIS COLLABORATION — In contradistinction to main stream fast ignition scenario (FIS) based on collisional stopping in compressed DT-fuel of relativistic electron beams (REB) in the 1-2 MeV energy range [1], we discuss the potentialities of ultra-relativistic REB stopped by a possible combination of Langmuir [2] and EMHD collective modes [3] altogether with numerous strongly inelastic electromagnetic reactions such as electron-positron Trident process as well as D and T electro disintegration in single nucleons and negative pion above 140 MeV. We focus on the trapping of this negative pion within a number of stable and Borromeanlike molecules built on a Debyelike interaction, able to initiate an ultrafast pion-catalysed cycle in the very dense compressed fuel at high temperature, thus preventing the occurrence of the detrimental alpha particle sticking so common in cold medium. The Au cone used in FIS experiments may also help converting REB in very hard Gamma rays adding their efficient photo disintegration to DT electro disintegration.

[1] C.Deutsch et al PRL 77,2483(1996)

[2] V.M.Malkin and N.J.Fisch PRL 89,125004 [2002]

[3] T.Yabuuchi et al New J Phys 11,093031 (2009)

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