

Abstract Submitted
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Novel Hybrid Reactor Concepts Based on Ignitor Technology and Physics¹ M. CIOTTI, ENEA, B. COPPI, MIT, R. GATTO, Uniroma, F. PANZA, INFN, A. CARDINALI, ENEA — The line of compact high field experiments developed with the Alcator and the Frascati Torus Programs has produced well confined plasmas with record high densities that make them particularly suitable as neutron sources. The technology and physics developed, along this line, for the Ignitor Program have been suggested by E. P. Velikhov (2019) as the basis for a D-T (Deuterium-Tritium) hybrid reactor with Th (Thorium) as its fissile component. Given the very high densities that can be sustained a suggestion (Anonymous, 2019) was made that a D-D (Deuterium-Deuterium) neutron source could also be adopted as reaching ignition conditions is not needed and pulsed operation is acceptable in both cases. A comprehensive analysis is underway to identify an optimal set of parameters and components for a D-T based system and to extend the relevant results to a possible D-D system. Recent advances made in areas related to fission reactors (e.g. molten salts blankets) have an important role in this analysis.

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