

Abstract Submitted
for the DPP19 Meeting of
The American Physical Society

Solid Standing of the Compact High Field Machine Approach for Fusion¹ D. CARNEVALE, Uniroma2 (Italy), B. COPPI, MIT, IGNITOR PROGRAM GROUP, CNR (Italy) — Although the value of investigating the physics of plasmas close to or at ignition condition has never been questioned, the “practical relevance of efforts with this goal [1] has been frequently passed under silence. By now studies of the requirements of power producing reactors have led to conclude that operating at ignition is necessary for this kind of reactors. The confinement scaling laws [2], that were identified when high field compact experiments began to be proposed originally in order to investigate igniting plasmas, have been rediscovered. Both “Renovatio Memoriae” [3] and “Damnatio Memoriae” [4] episodes have occurred in this context and in reference to the first introduction [2] of high field superconducting magnet technology in fusion research. The record confinement parameters, beginning to approach the ideal ignition conditions, obtained by the Alcator C Mod machine have validated the perspectives of success of the relevant line of experiments [2].

[1] B. Coppi, American Institute of Physics, 1721, 1, (2017) 020003.1.

[2] B. Coppi, A. Airoidi, R. Albanese, et al., Nucl. Fus., 55, (2015) 053011.

[3] A.E. Costley, et al., Nucl. Fus., 56, (2016) 066003.

[4] D. Kramer, Physics Today, 71, 8, (2018).

¹Sponsored in part by the U.S. Department of Energy and by C.N.R of Italy.

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Date submitted: 28 Jun 2019

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