

Abstract Submitted
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Improved Confinement Regimes and the Ignitor Experiment* F. BOMBARDA, ENEA, B. COPPI, MIT, P. DETRAGIACHE, ENEA — The Ignitor experiment is the only one designed and planned to reach ignition under controlled DT burning conditions. The machine parameters [1] have been established on the basis of existing knowledge of the confinement properties of high density plasmas. The optimal plasma evolution in order to reach ignition by means of Ohmic heating only, without the contribution of transport barriers has been identified. Improved confinement regimes are expected to be accessible by means of the available ICRH additional heating power and the injection of pellets for density profile control. Moreover, ECRH of the outer edge of the (toroidal) plasma column has been proposed using very high frequency sources developed in Russia. Ignition can then be reached at slightly reduced machine parameters. Significant exploration of the behavior of burning, sub-ignited plasmas can be carried out in less demanding operational conditions than those needed for ignition with plasmas accessing the I or H-regimes. These conditions will be discussed together with the provisions made in order to maintain the required (for ignition) degree of plasma purity. *Sponsored in part by the U.S. DOE.

[1] B. Coppi, et al. IAEA Fusion Energy Conference, OV/P-02 (2012). To be published in Nucl. Fus. 2013.

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