Abstract Submitted
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Improved Confinement Regimes for the Ignitor Experiment[1] A. AIROLDI, G. CENACCHI, CREATE, P. DETRAGIACHE, G. CLAI, ENEA, Italy, B. COPPI, MIT — The Ignitor experiment[2] is designed to achieve ignition in well confined deuterium-tritium plasmas, with Ohmic heating only or small amounts of additional RF heating. Thanks to its unique features ($B_T \leq 13$ T, $I_p \leq 11$ MA, $\langle n \rangle \leq 5 \times 10^{20}\mathrm{m}^{-3}$), Ignitor is the only device capable of accessing plasma parameters that are relevant to a net power producing D-T reactor. In fact, plasma regimes suitable to operate a reactor have yet to be produced. The Poloidal Field System in Ignitor makes it possible to operate with different configurations, from the reference "extended limiter" configuration to the configuration with double X-points just inside or just outside the first wall. X-point configurations are interesting as they may lead to a high confinement regime (H- mode) when the heating power is larger than a threshold value. H-mode operation in Ignitor has been assessed both with 0D calculations as well as 1 1/2D transport simulations. Quasi-stationary conditions can be attained when a process producing re-distribution of pressure and current profiles is active. The accessibility to improved confinement regimes with or without edge pedestal that have been observed on existing experiments is assessed.
[1]Sponsored in part by ENEA of Italy and by the U.S. D.O.E.
[2]B.Coppi, A.Airoldi, F.Bombarda, et al.,*Nucl. Fusion* **41**, 1253 (2001)

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