Abstract Submitted
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Context of the Ignitor Experiment* G. CENACCHI, F. BOMBARDA, P. DETRAGIACHE, M. ROMANELLI, ENEA, Italy, B. COPPI, M.I.T, A. AIROLDI, IFC-CNR, Milan, Italy — The Ignitor machine[1] has been designed to produce toroidal plasma currents up to 11 MA within relatively small dimensions with reasonable safety factors against macroscopic plasma instabilities. Ignition is achieved mainly with Ohmic heating, thanks to the high poloidal field obtainable, but an ICRH system is included to add flexibility. Particle fuelling is through both gas and high speed pellet injection. Demonstration of ignition, the study of the physics of the ignition process, and the heating and control methods for a magnetically confined burning plasma are the most pressing issues at present and they are specifically addressed by Ignitor. High magnetic field experiments can overlap with the envisioned operational regimes of large-scale devices in terms of the relevant dimensionless plasma parameters but they are unique in their abilities to approach ignition and thus open the way for better types of fusion reactors. Notice that even with H, He, and D Ignitor will provide results that can justify, by themselves, the construction of the machine. The experimental life of the Ignitor device will follow three stages, characterized mainly by different plasma components: phase I in H and ^{4}He, phase II in D and phase III in D-T, where the most ambitious part of the program will be carried out.
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[1]B. Coppi, A. Airoldi, et al., *Nucl. Fusion* **41(9)**, 1253 (2001)

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