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Ignition and Burning Plasma Regimes in the Double Null Configuration of Ignitor* G. CENACCHI, Italy, A. AIROLDI, IFP-CNR, Italy, B. COPPI, MIT — A new operating scenario for Ignitor with $B_T \approx 13$ T, $I_p \approx 9$ MA and a double X-point configuration (X- points just outside the first wall) has been investigated. The analyses carried out are directed to optimizing the plasma volume, the magnetic configuration and the relevant "safety factor" near the first wall. A transport analysis has been performed to simulate the current density evolution (important for the considered sequences of equilibrium configurations) and to verify the possibility of accessing H-regimes. The H-regime power threshold has been estimated from recent scalings based on a variety of experiments. This threshold power is consistent with that available from the provided ICRH system, combined with the Ohmic and α-particle heating. In the numerical simulations a volume average density $\langle n_e \rangle \approx 3 \times 10^{20}\mathrm{m}^{-3}$, an average $Z_{eff} \approx 1.5$, and 3 MW of ICRH a power absorbed by the plasma have been considered. Ignition and advanced parameters as those expected for the "standard" 11 MA scenario with the "extended" first wall configuration of Ignitor can be reached. Even without accessing the H-regime and with pessimistic assumptions about the energy confinement time, plasma conditions of relevance to the physics of burning plasmas can be attained.
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