

Abstract Submitted
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Ignitor Plasma Performance in the H-mode with New Scalings*

P. DETRAGIACHE, ENEA, Italy, B. COPPI, MIT — Ignitor can operate with a double-null configuration with the relevant X-points laying close to the first wall, $B_T \simeq 13$ T, $I_p \simeq 9$ MA, $R_0 \simeq 1.32$ m, $a \simeq 0.44$ m. The power threshold to access the H-regime has been found to be considerably lower on the basis of recent scalings¹ than originally assessed. The expected plasma parameters in this regime are estimated by using a global O-D model. The operating space corresponding to $Q \simeq 10$ is verified to be relatively broad, even considering the pessimistic case of rather flat density profiles, and far from density and β operational limits. Moreover, the analysis of JET experimental data² indicates that relatively peaked density profiles (e.g. $n_0/\langle n \rangle \simeq 1.5$) can be obtained in the H-regime. With these profiles, the attainable plasma parameters are found to improve considerably and values of Q much larger than 10 can be attained. The adoption of scalings³ for the energy confinement time with a weak dependence on β does not change the operating space significantly in the case of Ignitor.

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¹D. C. McDonald et al., *Plasma Phys. Control. Fusion* **48**, A439 (2006);

²H. Weisen et al., *Plasma Phys. Control. Fusion* **48**, A457 (2006);

³J. W. Cordey et al. *Nucl. Fusion* **45**, 1078 (2005).

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