Abstract Submitted
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ICRH Physics in the Ignitor Experiment[1] A. CARDINALI, ENEA, Italy, R.V. BUDNY, PPPL, B. COPPI, M.I.T. — The ICRH system adopted for Ignitor can operate with a large frequency band (80-120 MHz) that is consistent with toroidal magnetic fields in the interval 9-13 T. The broad range of delivered power (4-12 MW) is suitable to investigate different aspects of burning plasma dynamics. The ICRH physics relevant to the plasmas produced by Ignitor is reviewed. The calculated Power Deposition Profiles (PDP) when the ICRH is used to control the plasma relevant parameters in the igniting scenario has been used as an input for the transport code PTRANSP. In particular, PDP's calculated by means of the toroidal full wave code "TORIC" show that a small fraction of ^{3}He (1-2%) improve the wave absorption on ions at the plasma center, while a considerable fraction of the coupled power is damped on the electrons, in a broad range of plasma radii, considering the $n_\parallel$-spectrum radiated by the antenna. The evolution of the plasma parameter profiles simulated by PTRANSP using two different transport models are presented pointing out the role of the density profiles on fusion reaction rates. In particular, given the flexibility of the ICRH system, it is possible to control the plasma temperature, and consequently the thermonuclear instability that occurs at ignition, with modest amounts of ICRH power ($\leq$ 8 MW).

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