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Diagnostic Systems for the Ignitor Experiment[1] F. BOMBARDA, ENEA (Italy), F. GIAMMANCO, Università di Pisa (Italy), THE IGNIR INTERNATIONAL COLLABORATION — The main purpose of the Ignitor experiment ($R_0 \cong 1.32$ m, $a \times b \cong 0.47 \times 0.83$ m^2, $B_T \leq 13$ T, $I_p \leq 11$ MA) is that of establishing the reactor physics in regimes close to ignition ($T_e \cong T_i \cong 11$ keV, $n_0 \cong 10^{21}$m^{-3}). The pulse evolution at the maximum machine parameters is characterized by a ramp-up phase of the plasma current of 4 s and 4 s of flat-top, which allow to reach fully relaxed current profiles. The set of baseline diagnostic systems includes, among others, the advanced neutron spectrometer originally proposed for Ignitor and later adopted on JET, Thomson Scattering, ECE, High Resolution X-ray Spectrometer. A Dispersion-Interferometer operating at 1 μm instead of the conventional Two-color Interferometer at 10 μm is being considered for plasma density measurements. The high plasma density and temperature, together with the use of tritium, impose some limitations on diagnostic systems based on NB injection, escaping particles or in direct connection with the high vacumm of the plasma chamber. The high neutron flux is also expected to challenge the systems more directly exposed to it, although the low fluences do not pose particular concerns on material survival. The conceptual design of the main diagnostic systems has been carried out and the present lay-out around the machine is shown.

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