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**The ICRH Physics of the Ignitor Experiment*** A. CARDINALI, F. BOMBARDA, G. CENACCHI, A. COLETTI, M. SASSI, ENEA, Italy, B. COPPI, M.I.T., A. AIROLDI, IFP CNR, Milan, Italy, A. MAGGIORA, Politecnico di Torino, Italy — In Ignitor (high field and high plasma current experiment) the ignition phase can be reached by Ohmic heating only. Nevertheless an ICRH system has been included in the design to control the plasma temperature in the sub-ignited phase. To assist the approach to ignition, the ICRH heating can be applied during the ramp of the magnetic field and plasma current, in a Deuterium-Tritium plasma mixture. Taking into account these conditions, an interval of frequencies (80-120 MHz) and powers (5-18 MW, distributed over 4+2 port of the machine by means of double strap antennas), have been selected. A modest amount of power (5-6 MW), at the frequency of 115 MHz, is sufficient to accelerate considerably the attainment of ignition by increasing the plasma temperature near "ideal ignition" conditions, where bremsstrahlung emission is compensated by $\alpha$-particle heating. Full wave code simulations (D-T 50%-50%, $B_T(0)$ from 9 to 13 Tesla, and $I_p$ from 7 to 11 MA) have shown a direct ion heating at the second harmonic of Tritium, with a power transfer of 80% on the bulk ion species and the remainder on the electrons. The resulting deposition profiles are used to study of the temperature profiles evolution and the $\alpha$-particle production by appropriate transport codes.
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☐ Prefer Oral Session
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