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Ignitor Edge Plasma Modeling* F. SUBBA, R. ZANINO, Politecnico di Torino, Italy, A. AIROLDI, IFP CNR, Milan, Italy, F. BOMBARDA, G. CENACCHI, G. MADDALUNO, ENEA, Italy, B. COPPI, M.I.T. — A realistic evaluation of the thermal loads to be expected on the Ignitor first wall is crucial for the machine design optimization. Moreover, it is important to estimate the wall loads under a range of different operating conditions, because the LCFS of the plasma is nearly conformal to the physical wall shape, so that the thermal loads are more uniformly distributed over a large surface, but are also very sensitive to small changes in the plasma configuration. The original estimates of the thermal loads on the first wall, carried out with a cosine model and a parametrized plasma equilibrium, have recently been extended with the inclusion of the actual equilibrium configuration in the reference operating scenario and a number of off-normal conditions, including poor relative positioning of the plasma column with respect to the solid walls, effects of manufacturing tolerances in the wall assembly and start-up transients. A more accurate evaluation than that offered by the simplistic cosine model would require the full 2D modeling of the plasma in the SOL. In principle this could be done by an edge plasma code such as, for example, SOLPS. However, the particular limiter geometry of Ignitor represents a very challenging task for the application of traditional edge modeling tools. The formulation of a new computational tool flexible enough to be applied to Ignitor is being undertaken.
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