Contribution ID: **3219** Type: **not specified**

P2.1012 Analysis of pumping conditions in DEMO-FNS

Tuesday, 9 July 2019 14:00 (2 hours)

See full abstract here
http://ocs.ciemat.es/EPS2019ABS/pdf/P2.1012.pdf

DEMO-FNS is a tokamak-based fusion neutron source project being developed in Russia [1]. Issues of energy removal from DEMO-FNS were considered in [2], [3] in the "closed box" [4] approximation where the external sources and sinks of the particles, such as gas puffing and pumping, are essentially neglected. In the present paper we consider particle balance in the edge plasma, in particular, for helium that is an intrinsic reaction product, taking into account the realistic pumping speed, gas puff and He production rate. We use the SOLPS4.3 code suite [5] for 2D modelling of the edge plasma transport in the realistic geometry of the double-null magnetic configuration. The plasma consists of the D (representing both D and T), He and Ne ions and atoms and D2 molecules. The results provide the data necessary for expanding parameterization of the separatrix plasma parameters [3] by inclusion of the He-related quantities, such as the He density at the separatrix and the He atom influx to the core. This provides the more comprehensive set of the boundary conditions for the core plasma modelling in the framework of the integrated model [3].
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Session Classification: Poster P2

Track Classification: MCF