**Modeling of DEMO scrape-off layer plasma with neon and argon seeding**

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This talk is devoted to the problem of energy loads reduction at DEMO divertor plates. DEMO is for Demonstration Power Station; it's designed to be the first tokamak which will generate 1 GW thermonuclear power at a steady-state regime. For this purpose, power loads to DEMO divertor must be lower than 5 $MW \times m^{-2}$ and the electron temperature must be lower than 5 $e$V. The closest to DEMO tokamak is ITER, it was discovered by computer modeling that radiative impurity seeding leads to better plasma performance in the ITER divertor region. ITER computer modeling has been carried out by SOLPS-ITER code package, which has been tested on different existed tokamak devices.

In this presentation SOLPS-ITER modeling results for DEMO scrape-off layer plasma with neon and argon seeding are discussed. This modeling has been performed including charged particle drifts and currents, that has never done before for DEMO scrape-off layer plasma. It is demonstrated that both neon and argon decrease heat loads to the divertor plate to the suitable value of 5 $MW \times m^{-2}$ in the case of low single null magnetic configuration. The electron temperature in the far SOL of the divertor region is more than 5 $e$V for all analyzed cases. It is demonstrated that both neon and argon radiate with similar power density in the divertor region, but argon also has a huge part of its radiation inside the separatrix. It is discussed that in addition to neon radiative seeding higher neutral gas pressure is needed to achieve the same level of heat fluxes to the divertor target as argon radiative seeding.

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