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UEDGE modeling of divertor geometry effects in NSTX[1]
OLIVIER IZACARD, VLAD SOUKHANOVSKII, FILIPPO SCOTTI, Lawrence Livermore National Laboratory — We report efforts toward the modeling of divertor geometry effects using the fluid code UEDGE and NSTX experimental equilibria with different X-point heights. A variation of the geometry generates a competition between the poloidal magnetic flux expansion, which reduces the peak of the deposited heat flux and homogenizes its profile at divertor plates, and the proximity of the X-point to the divertor plates, which decreases the connection length and increases the peak heat flux. Our simulations use fixed fraction of carbon impurity, poloidally and radially constant transport coefficients, and high recycling boundary conditions, with a scan of density and pressure boundary conditions, and impurity fraction. Our simulations support the experimental observation that the poloidal flux expansion dominates the deposit heat flux over the parallel connection length effect. In opposite to experimental observation, detachment seems independent to the elevation. Improvement of the model is required.

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