

Integrating advanced plasma-wall interaction in 3D turbulent simulations for WEST

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In support to WEST operation, a dedicative effort has been made to improve 3D turbulent plasma simulations in particular to take neutral response and impurity sputtering into account. In this contribution, we present the latest results obtained with the code resulting from the merging of SOLEDGE2D and TOKAM3X which is able to cope with the realistic geometry of WEST plasma facing components thanks to immersed boundary conditions method. The plasma model used can address multi-species plasmas, following the collisional closure proposed by Zhdanov for multi-components plasmas. The plasma solver is also coupled to the neutral code EIRENE to take plasma recycling and wall sputtering into account. The new code can also be run in 2D in a transport code fashion where the turbulent transport is emulated by diffusive transport. A hybrid MPI-OpenMP implementation has been chosen to solve in parallel different plasma species and different geometrical subdomains.

First simulation results for WEST plasmas are presented and compared with experimental data.

Country or International Organization

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