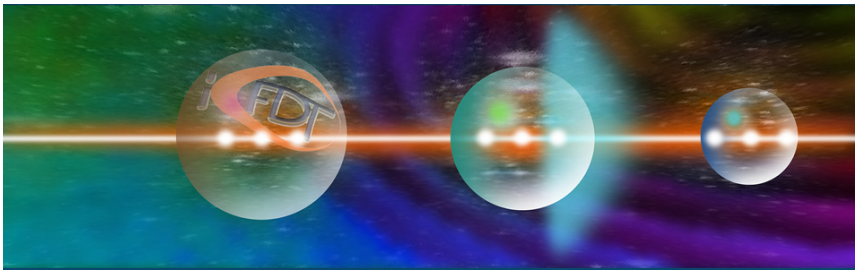

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Kinetic complexity in divertor region: Insights from particle-in-cell simulations

Friday, 5 October 2018 15:30 (30 minutes)

The coupled dynamics and kinetics between gas and plasma in the divertor region is studied by means of a one-dimensional Particle in Cell-Direct Simulation Monte Carlo (PIC-DSMC) model.
In particular, the collision-induced vibrational excitation/relaxation of H2 molecules and particle–surface interaction (vibrational relaxation and recombinative desorption) have been considered in detail to assess the importance of plasma volumetric recombination by molecular assisted reaction (MAR).
Spatially resolved results show that MAR processes are effective very close to the divertor plate in a region closer than 1.5 mm from the divertor plate. For farther regions the atom ionization, produced by MAR, starts to make molecular assisted recombination an ineffective reaction.

Summary

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Session Classification: DTT (Divertor Test Tokamak)