Kinetic simulation of the plasma edge on high performance computers DAVID TSKHAKAYA[1], University of Innsbruck, Association EURATOM-OEAW, A-6020 Innsbruck, Austria, RALF SCHNEIDER, Max Planck Institute fuer Plasmaphysik, EURATOM Association, 17491 Greifswald, Germany, SIEGBERT KUHN, University of Innsbruck, Association EURATOM-OEAW, A-6020 Innsbruck, Austria — In the present contribution we describe results of to our knowledge first fully kinetic simulations of the plasma edge on High Performance Computers (HPC) with more than 500 processors. We demonstrate that these new type of modeling allow to simulate large (few meter size) systems with finest resolution up to Debye length and electron Larmor radius. The developed parallel BIT1 code incorporates new physics-based parallel 1D solver and adaptive processor loading scheme allowig highly scalable parallel runs for strongly nonuniform plasma edge. As an example, we consider kinetic simulations of the 1D plasma, 2D neutral and impurity transport in the tokamak Scrape-of Layer. The developed model includes nonlinear interaction between all particle species and linear plasma recycling and impurity sputtering models.

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