

Abstract Submitted
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Gyrokinetic simulations on the isotope effect in high-density FT-2 discharges¹ SALOMON JANHUNEN, GABRIELE MERLO, University of Texas at Austin, DENIS KUPRIENKO, ALEXEY GURCHENKO, EVGENIY GUSAKOV, Ioffe Institute, FRANK JENKO, University of Texas at Austin, TIMO KIVINIEMI, Aalto University — A strong isotope effect on transport has been observed in high-density FT-2 discharges, where changing the operating gas from hydrogen to deuterium improves confinement time up to a factor of 2 in the highest density regimes. Experimental evidence suggests formation of a transport barrier in the high confinement regimes with deuterium, while hydrogen plasmas retain their transport characteristics. We present GENE simulation results for four characteristic cases in this series of experiments: two low density cases where isotope effect is not seen, and two high density cases where significant effect is present. We also identify radially localized impurity modes observed in the simulations.

¹Computational resources of NERSC have been used in this work.

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