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Characterization of the collisional transport of a high-Z impurity in a Wendelstein 7-X Electron Cyclotron Resonance Heated plasma[1] ALBERT MOLLÉN, NOVIMIR A. PABLANT, PETER TRAVERSO, Princeton Plasma Physics Laboratory, HÅKAN M. SMITH, ANDREAS LANGENBERG, THOMAS WEGNER, BENEDIKT GEIGER, RAINER BURHENN, GOLO FUCHERT, SERGEY BOZHENKOV, HANNES DAMM, EKKEHARD PASCH, Max Planck Institute for Plasma Physics, JOSÉ MANUEL GARCíA-REGAÑA, JOSÉ LUIS VELASCO, Laboratorio Nacional de Fusión, CIEMAT, STEFAN BULLER, Chalmers University of Technology, WENDELSTEIN 7-X TEAM — A concern for stellarators is the central accumulation of high-Z impurities driven by the radial electric field, expected to point inwards at reactor relevant conditions. Here we study the radial transport of tracer Ar16+ impurities in an ECRH plasma from the last campaign of the W7-X stellarator [Klinger et al. Nucl. Fusion 59 (2019) 112004], and compare results from collisional transport calculations to experimental values inferred from X-ray Imaging Crystal Spectrometer measurements. The calculations are performed with three radially local drift-kinetic equation solvers, SFINCS [Landreman et al. Phys. Plasmas 21 (2014) 042503], EUTERPE [Regaña et al. Nucl. Fusion 57 (2017) 056004] and KNOSOS [Velasco et al. arXiv:1908.11615]. These tools include effects such as advanced collision operators and potential variations along flux-surfaces which can be important when studying high-Z impurities. We find that the radial collisional transport of Ar16+ is dominated by convection, and that the collisional transport can at most account for $\sim$10% of the observed transport.

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