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STRAHL modeling of impurity transport experiments with on- and off-axis heating during the first divertor campaign on Wendelstein 7-X P.J. TRAVERSO, Auburn Univ, N.A. PABLANT, Princeton Plasma Phys Lab, A. LANGENBERG, R. BURHENN, TH. WEGNER, Max Planck Inst, B. GEIGER, Univ Wisconsin, D. ZHANG, B. BUTTENSCHN, H.M. SMITH, Max Planck Inst, J.D. KRING, J.C. SCHMITT, D.A. MAURER, Auburn Univ, W7-X TEAM — In the first divertor campaign of Wendelstein 7-X, iron impurity transport experiments were performed via laser blow-off injection during an on- to off-axis ECRH scan at constant power. The iron line emission was measured by the x-ray imaging spectrometer systems, HR-XIS and XICS, and the high efficiency XUV overview spectrometer, HEXOS. The spectral measurements show an increase in the global impurity transport time as ECRH power was deposited more off-axis. To understand this observed change, the 1D transport code STRAHL was employed to model the iron line radiation using anomalous diffusion and convection velocity profiles in addition to the neoclassical & classical transport profiles provided by the drift kinetic equation solver, DKES. The observed line-integrated iron emissivity was matched using a chi-squared minimization by varying the anomalous diffusion and convective velocity profiles within STRAHL. Although in all cases the measured data could only be well-matched with anomalous diffusion at levels 50 times larger than neoclassical predictions, the inferred transport uncertainties were too large to make clear comparisons between the on- and off-axis cases. Therefore a sensitivity study using synthetic data was performed to better capture the systematic uncertainties.

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