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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[1] P. J. TRAVERSO, Auburn University, N. A. PABLANT, Princeton Plasma Phys Lab, A. LANGENBERG, TH. WEGNER, D. ZHANG, B. BUTTENSCHN, R. BURHENN, Max Planck Inst, B. GEIGER, University of Wisconsin, D. A. MAURER, J. KRING, J. SCHMITT, Auburn University, W7-X TEAM — In the first divertor campaign (OP 1.2a&b) of Wendelstein 7-X, impurity transport experiments were performed with iron via laser blow-off injection. The iron line radiation was collected at various off-axis ECRH heating levels by the x-ray imaging spectrometer systems, HR-XIS and XICS, and the high efficiency XUV overview spectrometer, HEXOS. These measured spatial and temporal iron emissivities are used to infer the radial diffusion and convective velocity profiles by means of the 1D transport code STRAHL. To accomplish this inference the temporal evolution of the iron line radiation is modeled with neo-classical diffusion and convection profiles provided by the drift kinetic equation solver, DKES, in addition to assumed stationary anomalous diffusion and convective velocity profiles. To match both the observed line-integrated iron emissivity and a corresponding spatially resolved emissivity profile for the He-like state, a chi-squared minimization is done on the experimental data by varying the input spatial values of the anomalous diffusion and convective velocity parameters in STRAHL.

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