An interpretive mode for the UEDGE transport code*

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The 2D UEDGE edge-plasma transport code is usually run in a manner that is loosely called a predictive mode, i.e., boundary conditions and radial transport coefficients are chosen, and the solution of the 2D plasma and neutral transport equations are then advanced in time, often to a steady-state solution. When the ad hoc radial transport coefficients are adjusted under certain constraints to approximately fit experimental profile data, the simulation is partially interpretive. Here a new mode of operation is described where no constraints are placed on the transport coefficients, but rather the plasma profiles in some domain (e.g., inside the magnetic separatrix) are given, and UEDGE is run to produce transport coefficients as output, much as the core transport codes TRANSP and ONETWO. For the UEDGE case, however, the scrape-off-layer (SOL) plasma is evolved consistent with a transport model partially constrained by the data, and the neutrals are evolved consistently throughout the pedestal/SOL. This technique is used for the edge plasma by Stacey and Groebner (Phys. Plasmas **14** 012501**,** 2007, and references therein) to model DIII-D data, but with simpler SOL plasma and neutral models than available in UEDGE. Results will be shown for DIII-D edge profile data and an assessment made of the sensitivity of the solution to the SOL models. Cases considered show that the neutral fueling of the pedestal region dominated by the general vicinity of the X-point region and thus has a substantial geometrical complexity.

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