

Abstract Submitted  
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**Atomic processes in edge plasmas**<sup>1</sup> DAVID SCHULTZ, Oak Ridge National Laboratory, PREDRAG KRSTIC, ORNL, MITCH PINDZOLA, Auburn, DONALD GRIFFIN, Rollins College, STUART LOCH, Auburn, CONNER BALANCE, Rollins College, TATSUYA MINAMI, Auburn, CARLOS REINHOLD, ORNL, STEVE STUART, Clemson — Atomic processes play a number of key roles in both the physics of edge plasmas and in their diagnostics. We will provide a brief overview of a number of electron-impact and heavy-particle atomic collision calculations and the associated evaluated databases that are pertinent to edge modeling. Examples will include a large, well tested set of elastic and related transport cross sections as well as generalized collisional-radiative coefficients for all ion stages of Li and Be. We will also report on recent work that has re-evaluated widely assumed scaling relations for electron-impact ionization of excited states of hydrogen-like ions and how this affects the effective ionization rate coefficient used in a wide range of models. Finally, novel calculations of chemical sputtering, sticking, and reflection of D and D<sub>2</sub> incident upon deuterated carbons surfaces (amorphous and graphite), in the energy range from about one eV to hundreds of eV, will be described. New and unique features of these simulations in comparison to the previous ones include the surface preparation, enhanced statistics enabled by ultrascale computer resources, and use of the most recent, improved hydrocarbon potentials.

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David Schultz  
Oak Ridge National Laboratory

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