

Abstract Submitted
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Atomic Models for High Charge State Uranium Plasmas¹ DAVID FILLMORE, PETER MESSMER, Tech-X Corporation — We present a set of atomic process models for inclusion in electron-Uranium ion plasma simulations. These include an adaptation of the binary encounter dipole model of Kim and Rudd (1994) for electron impact ionization, the Burgess general formula for dielectronic recombination rates, and the semiclassical impact parameter approximation for ion-atom charge exchange. The orbital binding energies and oscillator strengths are estimated with a multi-configuration Dirac Fock Model. Comparisons are made to existing experimental measurements of electron impact ionization for neutral Uranium (Halle et al., 1981) and for U(10+), U(13+) and U(16+) (Gregory et al., 1990). These models have been developed for use in simulations of U(28+) through U(35+) production at the the Versatile Electron-Cyclotron-Resonance Ion Source for Nuclear Science (VENUS) at Lawrence Berkeley Laboratory.

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