

Abstract Submitted
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An improved rf-sheath boundary condition and implications for ICRF modeling¹ J.R. MYRA, Lodestar, H. KOHNO, Kyushu Inst. Tech. — To improve the fidelity of global ICRF codes for interactions with the scrape-off layer plasma, a newly improved sheath boundary condition has been formulated. Extending previous work, which employed a capacitive limit, the new boundary condition generalizes the formulation to a complex sheath impedance which additionally describes the effective sheath resistance at rf frequencies. The latter is important for modeling localized rf power deposition which could potentially cause damaging plasma material interactions. A generalized sheath model has been developed and is described by four dimensionless parameters: the degree of sheath magnetization, the magnetic field angle with the surface, the rf field strength and the degree of ion mobility set by the wave frequency. Characterization of the sheath impedance in this parameter space using fits and interpolations will be presented together with progress on testing and verification of the boundary condition in slab geometry using numerical codes.

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