

Abstract Submitted  
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**RF sheaths for arbitrary B field angles**<sup>1</sup> DANIEL D'IPPOLITO, JAMES MYRA, Lodestar Research Corporation — RF sheaths occur in tokamaks when ICRF waves encounter conducting boundaries and accelerate electrons out of the plasma. Sheath effects reduce the efficiency of ICRF heating, cause RF-specific impurity influxes from the edge plasma, and increase the plasma-facing component damage. The rf sheath potential is sensitive to the angle between the B field and the wall, the ion mobility and the ion magnetization. [J.R. Myra et al., Nucl. Fusion 30, 845 (1990)]. Here, we obtain a numerical solution of the non-neutral rf sheath and magnetic pre-sheath equations (for arbitrary values of these parameters) and attempt to infer the parametric dependences of the Child-Langmuir law. This extends previous work [D.A. D'Ippolito and J.R. Myra, APS-DPP Meeting, 2013] on the magnetized, immobile ion regime. An important question is how the rf sheath voltage distributes itself between sheath and pre-sheath for various B field angles. This will show how generally previous estimates of the rf sheath voltage and capacitance were reasonable, and to improve the RF sheath BC.

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