Abstract Submitted
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**Modeling the ITER ICRF Antenna with Integrated Time Domain RF Sheath and Plasma Physics**[1] DAVID SMITHE, Tech-X Corporation, DANIEL D'IPPOLITO, JAMES MYRA, Lodestar Corporation, CSWPI COLLABORATION — We present results from computer simulations of detailed 3D models of the ICRF launcher assembly, including straps, Faraday Shields, and vessel wall [1]. These simulations provide exquisite detail of the antenna near fields, and the sheaths between plasma and the metallic components of the launcher. Significant work has been done to create a sheath model [2] that allows us to estimate local values of sheath potential everywhere on the 3D structure, so that we can estimate RF rectified plasma potential [3]. Those potentials are in turn a likely source of sputtering and impurity creation, when the antennas are operating, and we discuss ongoing work to quantify these effects. Additional study of the antenna near fields also investigates slow waves which can exist in the low density scrape-off layer, and may impact power balance, and also sheath amplitudes. Movies of the 3D field and sheath oscillations will be shown. [1] "Quantitative Modeling of ICRF Antennas with integrated Time Domain RF Sheath and Plasma Physics," David N. Smithe, et. al., Proceedings of the 20th Topical Conf. on RF Power in Plasmas, AIP Publishing (2013). [2] "A radio-frequency sheath boundary condition and its effect on slow wave propagation," D. A. D'Ippolito and J. R. Myra, Phys. Plasmas vol. 13, p. 102508, 2006. [3] "RF Models for Plasma-Surface Interactions: Sheath Boundary Conditions with Dielectrics," T. G. Jenkins and D. N. Smithe, Proceedings of the 2014 ICOPS/BEAMS Conf.

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