

Abstract Submitted
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Reconstructing RF Fields from Ray Tracing Data¹ A.S. RICHARDSON, P. BONOLI, J. WRIGHT, Plasma Science and Fusion Center, MIT — Ray tracing techniques can be used to estimate the propagation of RF fields in plasmas. However, there are discrepancies between the power density profiles calculated using full-wave codes and ray tracing simulations [1]. We want to examine the impact of diffraction and interference on these results. In order to do this, we have been examining the possibility of reconstructing RF fields from ray tracing data, using tools developed for semi-classical quantum approximations. By retaining the next order terms in the derivation of the ray tracing approximation, it is possible to obtain a set of ODE's which describe the dynamics of a wave packet centered on the ray [2]. From this information, an approximate solution for the fields can be obtained. These fields can then be used to calculate power deposition profiles for comparison with the full-wave solutions. In this poster, we describe the semi-classical wave packet approximation, and show preliminary results for the reconstruction of LH fields from ray data. [1] P. Bonoli, et al., Phys. Plasmas 15, 056117 (2008) [2] R. Littlejohn, Phys. Rep. 138 (4) p. 193-291 (1986)

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