

Abstract Submitted
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Absorption and Modification of Lower Hybrid Waves in the Scrape Off Layer¹ R. PARKER, G. WALLACE, S. SHIRAIWA, S-G. BAEK, I. FAUST, MIT PSFC — Loss of current drive efficiency of lower hybrid waves at high density in Alcator C-Mod current drive experiments has been attributed, at least in part, to interactions in the SOL. While ray-tracing calculations indicate that collisional absorption and modification of n_{\parallel} during reflections in the SOL can be significant, their validity can be called into question owing to steep SOL gradients. In order to further quantify these losses, full-wave calculations using a plane-stratified SOL model have been carried out. The results show that the loss resulting from reflections in the SOL can be substantial, with collisional losses accounting for a loss of up to 50% per bounce of the incident wave power. The loss is sensitive to the SOL parameters with the strongest collisional absorption occurring in the case of steep temperature and weak density gradients. Modification of n_{\parallel} can also be significant when the density gradient and normal to the flux surfaces are not aligned. These effects are less severe for the fast wave since its penetration into the SOL is significantly less than that of the slow wave.

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