Abstract Submitted
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Modeling LH wave refraction through SOL blobs using synthetic turbulence data[1] BODHISATWA BISWAS, SYUNICHI SHIRAIWA, PAUL BONOLI, GREGORY WALLACE, ANNE WHITE, STEPHEN WUKITCH, MIT-PSFC — Lower hybrid (LH) waves are an efficient means to drive off-axis current in a tokamak. LH wave and scrape-off-layer (SOL) interactions may affect wave propagation, leading to altered core power absorption and decrease in current drive (CD). Previous wave-scattering models assume non-intermittent turbulence and have yet to explain experimental measurements of CD efficiency. Synthetic SOL turbulence that account for intermittent blob-like structures [1] is coupled to the ray-tracing/Fokker-Planck model GENRAY/CQL3D. In a slab geometry, refraction through blob-like turbulence is shown to result in increased wave scattering compared to previous models. This model is next used to study the effects of SOL refraction on power deposition and CD in an Alcator C-Mod geometry. Initial results show that the presence of SOL blobs lead to broadening of the power deposition profile caused by refraction at the edge and the subsequent change in evolution of $N_{||}$. Increasing blob packing fraction and density can also decrease fraction of LH power coupled to core, implying waves are trapped in the highly collisional SOL. [1] J. M. Sierchio et al., RSI. 87, 023502 (2016).

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