

Abstract Submitted  
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**Scattering of radio frequency waves by edge density fluctuations<sup>1</sup>**

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— The coupling of externally launched radio frequency (RF) waves to a plasma is through an edge region with fluctuating density. The fluctuations can lead to scattering of the waves and hinder their coupling into the core plasma. Consequently, the efficiency for heating and/or current drive by RF waves is lowered. We study the effect of density fluctuations on RF waves in the ion cyclotron, lower hybrid, and electron cyclotron range of frequencies. We compare the full wave effects with a model where the waves are represented by rays. Then the Hamilton-Jacobi equations are applicable. A statistical model for the refraction of rays due to the fluctuating part of the plasma permittivity is developed. We will present results from this model showing the effect of fluctuations on the coupling of various RF waves.

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