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Scattering of radio frequency waves by edge density blobs in tokamak plasmas[1] A.K. RAM, PSFC, MIT, K. HIZANIDIS, Y. KOMINIS, NTUA, Greece — The density blobs present in the plasma edge in magnetic fusion devices can scatter radio frequency (RF) waves through refraction and diffraction. Using the geometric optics approximation for the waves, a Fokker-Planck equation for the scattering of rays by a random distribution of blobs has been derived [1]. It is found that the scattering can diffuse the rays in space and in wave-vector space. The diffusion in space can make the rays miss their intended target region, and the diffusion in wave-vector space can broaden the wave spectrum and modify the wave damping profile. For ITER-type plasmas the wave scattering can lead to the electron cyclotron beams missing their intended target region of growing neoclassical tearing modes. The model is extended to include diffraction and determine changes in spatial propagation and in wave spectra of the RF waves.

[1] K. Hizanidis, A. K. Ram, Y. Kominis, and C. Tsironis, *Physics of Plasmas* **17**, 022505 (2010).

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