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Scattering of radio frequency waves by density blobs[1] A.K. RAM, PSFC - MIT, K. HIZANIDIS, J. VALVIS, NTUA, Greece — The scattering of ion cyclotron, lower hybrid, and electron cyclotron waves by density blobs embedded in the edge region of a fusion plasma is studied using a full-wave model [1]. The theory is similar to that for Mie scattering of electromagnetic waves by dielectric objects. The plasma, both inside the blob and outside, is assumed to be homogeneous and cold so that there are only two independent wave modes. The anisotropy induced by the magnetic field is such that the propagation characteristics and the polarization of the wave modes depend on the polar angle with respect to the direction of the magnetic field. Consequently, an incident plane wave is not only scattered by the blob, but also couples power to a different plasma wave. The blobs are assumed to be either cylindrical, with their axes aligned along the magnetic field, or spherical. The spectrum is affected by the size of the blobs, and the frequency and direction of propagation of the incident wave. We present the theoretical model along with numerical results, for all three frequency regimes, on the spectral characteristics of the scattered waves propagating into the plasma core.

[1] A. K. Ram, K. Hizanidis, and Y. Kominis, *Phys. Plasmas* **20**, 056110 (2013).

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