

Note from Mike Jones:

Here is a little more detail about how photons get effective mass that is not mentioned in Chapter 9 of Schumm's book. For radio waves propagating through a plasma such as the ionosphere, the photons have an effective mass equal to $h f/c^2$, where h is Planck's constant, f is the plasma frequency of the plasma, and c is the speed of light in free space. The frequency f in this case is also equal to the effective rest frequency of the photon. The square of the plasma frequency is proportional to the density of electrons in the plasma.

Mike

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