

Interactive comment on “Aspect sensitivity of VHF echoes from field aligned irregularities in meteor trails and thin ionization layers” by Q. H. Zhou et al.

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The paper by R. E. Robson and Dr. Elford’s discussion are very useful in delineating the current state concerning diffusion at the meteor heights. Central to Robson and Dr. Elford’s discussion is the difference in diffusivity between the perpendicular to B and parallel to B directions. The verification of such a difference using underdense meteor echoes is fairly straightforward, as suggested by Dr. Elford. The MU radar, with its pointing and interferometer capability and a dip angle nearly 45 degrees is an ideal radar for such a study. However, such a study, to our knowledge, has not been done yet.

Our present paper is mostly concerned with the range spread trail echoes (RSTE) produced by plasma instability. The decay constant of the RSTE is much longer than that

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derived using the presently accepted ambipolar diffusion coefficient. This indicates diffusion rate perpendicular to B in a RSTE is indeed much smaller than the commonly accepted diffusion rate. If electrodynamics plays a negligible role in the decaying stage of RSTE, RSTE observation is consistent with the theoretical prediction that perpendicular diffusion is slower than parallel diffusion.

We will update the references and expand the discussion on diffusion in the final submission.

Interactive comment on Atmos. Chem. Phys. Discuss., 4, 731, 2004.

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