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Interactive comment on "Variation in altitude of high-frequency enhanced plasma line by the pump near the 5th electron gyro-harmonic" *by* Jun Wu et al.

Anonymous Referee #2

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Review of "Variation in altitude of high-frequency enhanced plasma line by the pump near the 5th electron gyro-harmonic" by Wu et Al.

This manuscript presents experimental results of pumping the ionospheric plasma by transmitting a powerful radio wave into the ionosphere from the EISCAT Heating facility and studying the plasma response with the EISCAT UHF incoherent scatter radar. Interpretations of the experimental results are given in terms linear dispersion properties of Langmuir waves in unmagnetized plasma.

It is not clear what is new in the manuscript. Dependencies of the HFPL and Langmuir dispersion characteristics on electron density and temperature as well as pump fre-

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Discussion paper

quency are well known since decades. Also, electron gyroharmonic results where, for example, discussed already by Honary et al. (JGR 100, 21489, 1995). Further, several papers have been published by the authors from the same two hours of experiments, even with the same figures(!), but no information is given on how these papers relate to each other and to the present treatment. In addition, the Discussion is confusing and appears logically inconsistent. For example, the paragraph lines 161-177 concerns a logic that is applicable for a constant Langmuir wave frequency, that is constant pump frequency. But in the experiments the pump frequency is changed. Both the pump frequency and T_e influence the height at which Langmuir waves are detected by the radar. These two should be kept separate, not mixed together. Taken together, therefore, I cannot recommend publication of this manuscript.

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