

Interactive comment on “BD-IES Observation of Multi-Period Electron Flux Modulation Caused by Localized Ultra-Low Frequency Waves” by Xingran Chen et al.

Anonymous Referee #2

Received and published: 17 March 2020

This manuscript presents multi-period modulations of electron flux from satellite as well as ground magnetometers caused by drift resonant interaction with localized ULF waves. Numerical calculation is applied to nicely reproduce the observed feature. This manuscript is compelling and well written and is potentially important for better understanding the outer radiation belt electron behavior. The reviewer suggests it to be published after including the following minor comments without another round of review.

Line 227, 'they corresponds to' → they correspond to

Line 286, 'with a azimuthally' → with an azimuthally

Line 287, 'between the our' → between our

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Line 292, 'the azimuthal concentration of the waves extend' → the azimuthal concentration of the waves extends

Line 299, the link of BD-IES is not accessible. Please check this.

The reviewer would also like to draw authors' attention to the following two recent papers, which are highly related to the focus of the current manuscript.

1. Zhang et al. [2019] reported double frequency modulation of electrons at keV and eV energy channels due to drift resonance and ExB force, respectively.

Zhang, S., Tian, A., Degeling, A. W., Shi, Q., Wang, M., Hao, Y., et al. (2019). Pc4-5 Poloidal ULF Wave Observed in the Dawnside Plasmaspheric Plume. *Journal of Geophysical Research: Space Physics*, 124, 9986–9998. <https://doi.org/10.1029/2019JA027319>

2. Shen et al. [2018] reported localized ULF waves in the noon to dusk sector of Earth's magnetosphere caused by foreshock transients.

Shen, X.-C., Shi, Q., Wang, B., Zhang, H., Hudson, M. K., Nishimura, Y., et al. (2018). Dayside magnetospheric and ionospheric responses to a foreshock transient on 25 June 2008: 1. FLR observed by satellite and ground-based magnetometers. *Journal of Geophysical Research: Space Physics*, 123, 6335–6346. <https://doi.org/10.1029/2018JA025349>

Interactive comment on Ann. Geophys. Discuss., <https://doi.org/10.5194/angeo-2019-139>, 2019.