Ann. Geophys. Discuss.,
https://doi.org/10.5194/angeo-2019-54-AC2, 2019

Annales Geophysicae Discussions
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Interactive comment on "Acceleration of protons and heavy ions to suprathermal energies during dipolarizations in the near-Earth magnetotail" *by* Andrei Yu. Malykhin et al.

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Received and published: 27 May 2019

Dear commentator, thanks a lot for your comments and attention to our manuscript. Follow we take our answer: Discussion, page 6, lines 28 – 33: I suggest to add some discussion on why, in some cases, the amount of energy gain may exceed both the theoretical and the authors' estimations of ΔW

-Thank you for this comment. We were not clear enough. In new version we add some discussion in page 6, lines 28 – 33 :

"However, our analysis of the γ dynamics showed that some fraction of light ions can

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Discussion paper

be accelerated to energies more than 600 keV and some fraction of oxygen ions can be accelerated up to ∼1.2 MeV. Thus, in some cases the amount of energy gain may exceed both the theoretical and our own estimations of ΔW. It is worth noting that these estimations were obtained for a single propagating DF. However, dipolarizations analyzed in our study represent long lasting complicated events, which consist of multiple DFs with different spatial scales. In the course of interactions with such multiscale magnetic structures ions can experience multistage energy gain. We may suggest that ions are accelerated due to their subsequent nonadiabatic interactions with the system of multiple DFs and, thus, their resulting energy gain can exceed the energy gain estimated for the interaction with a single DF. Verification of this assumption requires simulation of ion dynamics in complicated multiscale dipolarizations."

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