Ann. Geophys. Discuss.,
https://doi.org/10.5194/angeo-2018-45-RC5, 2018

Annales Geophysicae Discussions
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Interactive comment on "A source mechanism for magnetotail current sheet flapping" *by* Liisa Juusola et al.

Anonymous Referee #2

Received and published: 27 June 2018

1. As you replied that your 2-D simulation cannot definitely differentiate which flapping type it is, it is only a potential candidate to explain the source to trigger the kink-like flapping, thus I think the title of your paper could be better changed as "A possible source mechanism for magnetotail flapping motion...". 2. Although you calculated the dBx/dt, Vz, the location of plasma sheet, and shown it in Figure 6, I did not see any comparisons between your simulation and the actual observation properties of flapping motion. I understand your simulation is 2-D, you are unable to compare the wavelength, propagation speed, etc., but you can compare the flapping period at least. From your Figure 3, Figure 6, your flapping period is about 2 hours, it is evidently much larger than the typical observed flapping period (10 mins). The simulation is a good tool to explore the physical mechanism, but I CANNOT accept it without any comparison with

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observations. 3. As you agree with my comment that, the source could be multiple. Here, you only consider the case of solar wind that “Steady solar wind, characterized by Maxwellian distribution functions, proton density of 1 cm−3, temperature of 0.5 MK, velocity of −750 km/s along the x axis, and magnetic ïňĄeld of −5 nT along the z axis (purely southward IMF)”. Have you considered the other solar wind conditions, e.g. the northward IMF; the SW with a jump of dynamic pressure? I think you have to answer a question if your study is really important: Among the possible multiple sources, how much the case you studied contribute to the tail flapping motion?

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