

Interactive comment on “Quasi-separatrix Layers Induced by Ballooning Instability in Near-Earth Magnetotail” by Ping Zhu et al.

Anonymous Referee #2

Received and published: 12 March 2019

In their paper the authors attempt to stress the importance of 3D geometry of the reconnection process through the QSL method that they adopt from the solar physics community and apply for MHD simulations of a magnetotail plasmoid formation in the presence of an MHD ballooning instability. The presented results are a very interesting piece of work, which is clear, novel and fit the scope of Ann. Geophys. This would be the reason for prompt publication. Although it would be nice to hear the authors' answers on two questions. 1) Would the QSL method be applicable for particle-in-cell simulations of reconnection caused in the course of a kinetic ballooning instability? 2) The authors showed that the reconnection sites identified with the QSL method were produced at the same x position and strictly periodically in the y direction. Thus, although the reconnection is three-dimensional, the resulting plasmoid, as far as I under-

C1

stand is essentially a two-dimensional structure. This is hardly possible in nature and could be discussed a little in the last section of the paper.

Interactive comment on Ann. Geophys. Discuss., <https://doi.org/10.5194/angeo-2019-2>, 2019.

C2