

The authors present a technique using conformal mapping in the complex plane to describe various magnetopause models, in a similar way to existing descriptions of bow shock models. This paper has potential for being a useful methodology paper, and I recommend that it be published after a minor revision. My issues (detailed below) mainly concern a somewhat lacking reference to earlier work.

Detailed comments:

Abstract: 'Magnetopause model is presented'

Fix grammar

Also, references in the abstract is usually not recommended.

line 9: 'The Shue model can be given in a simple analytic way by combining a parabolic shape with a power law, and has successfully been tested against the magnetopause of the Earth and the other planets such as Mercury.'

Here some relevant references should be given.

l 12: 'as far as'

'as long as'

l 15: 'The bow shock is often modeled as a conic section (either as a parabola or as a hyperbola) and the analytic expression for the conformal map is known.'

Also here some relevant references would be suitable.

l 25: 'In our work, we choose $\alpha = 0.5$ which is statistically representative.'

Again, provide references to substantiate this claim.

l 35: 'The distance to the axis'

What axis?

l 45: 'the division term'

'the denominator'

l 47: 'After some exercises in calculus'

I find this type of 'funny' formulations to just be a distraction. I recommend reformulating to a more neutral formulation,