

Interactive comment on “Calculations of the integral invariant coordinates I and L^* in the magnetosphere and mapping of the regions where I is conserved” by K. Konstantinidis and T. Sarris

Anonymous Referee #2

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The manuscript “Calculations of the integral invariant coordinates I and L in the magnetosphere and mapping of the regions where I is conserved” by K. Konstantinidis and T. Sarris presents comparisons of the second and third adiabatic invariants I and L^* calculated from different models/methods. While it is interesting to know how these different models/methods compare to each other, there are several issues that the authors need to address:

1. In the introduction section, the authors simply described the adiabatic invariants. For a technical research paper, what is the motivation of your work? What science questions you intend to address so that you carried out this work? More background information is needed. In addition, there is no definition of those parameters in equation C2299

tions (1) and (2).

2. While the authors described how L^* is calculated in most of these programs/models/methods, they omitted this in the IRBEM-lib.

3. Since most of the comparisons in this work are on L^* and I , why is L^*_{\max} (which is perhaps only available in LANL*) introduced or even calculated?

4. Please elaborate the purpose of the work on “mapping regions of constant” in section 5.

5. What can we learn from these comparative results? Did the authors simply want to report these results or convey some implication? For example, if we were to calculate I or L^* , which model or regions should we choose? The “Conclusion” section is rather a “Summary” section.

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