

Report on the doctoral thesis

Title: The study of instabilities in solar wind and in magnetosheath and their interaction with the Earth's magnetosphere

Candidate: Mgr. Kateřina Andréevá

The topic of the thesis is up-to-date subject in the current Sun-Earth research. Methods, data, analysis and interpretations in the thesis and results obtained, are on high level and fully correspond to the modern research in the Sun-Earth physics.

As main results of the thesis I consider:

- a) Statistical study and event analyses show that the propagation speeds of disturbances are larger in the magnetosphere than in the solar wind.
- b) Disturbance speed is higher in the nightside than in the dayside magnetosphere.
- c) Results obtained from observations were found in a very good agreement with those computed using 3-D MHD simulations.

Minor comments:

- a) In Introduction some definitions and formulations are so brief that become unclear, e.g. last paragraph of page 13. What thin layer? What stationary system?
- b) Some variables are not clearly explained, e.g. Bz, normal vector n.
- c) Sometimes there are too many abbreviations, e.g. CIRs in the caption of Figure 2.3.
- d) No text relevant to Figure 2.3.
- e) Fig. 2.4. presents several types of shocks, but only with one figure.
- f) Table 5.1 It is not possible to read the upper part of table.
- g) It would be good to explain more clearly who and where the MHD simulations were made.

Conclusion:

The comments mentioned above are of minor character. Mgr. Kateřina Andréevá fully demonstrated her ability for scientific work, her thesis definitely fulfils the criteria for PhD. thesis.

I recommend that the candidate obtains the PhD. degree after successful defense.

Ondřejov, July 30, 2008

RNDr. Marian Karlický, DrSc.