

# Accepted Manuscript

Influence of the crustal magnetic field on the Mars aurora electron flux and UV brightness

D.V. Bisikalo , V.I. Shematovich , J.-C. Gérard , B. Hubert

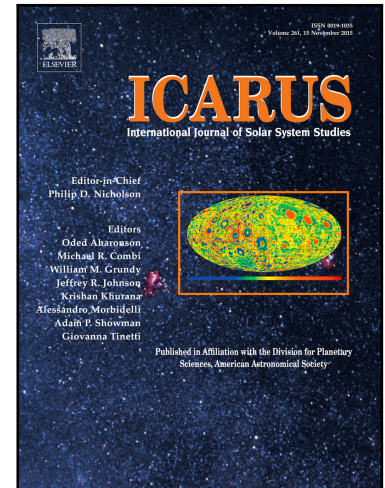
PII: S0019-1035(16)30550-4  
DOI: [10.1016/j.icarus.2016.08.035](https://doi.org/10.1016/j.icarus.2016.08.035)  
Reference: YICAR 12174

To appear in: *Icarus*

Received date: 9 March 2016  
Revised date: 7 July 2016  
Accepted date: 29 August 2016

Please cite this article as: D.V. Bisikalo , V.I. Shematovich , J.-C. Gérard , B. Hubert , Influence of the crustal magnetic field on the Mars aurora electron flux and UV brightness, *Icarus* (2016), doi: [10.1016/j.icarus.2016.08.035](https://doi.org/10.1016/j.icarus.2016.08.035)

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



**Highlights**

- A Monte-Carlo electron transport model to investigate the role of the magnetic field on the downward and upward electron fluxes, the brightness and the emitted power of auroral emissions.
- The ratio between the upward and downward energy fluxes computed at the top of the atmosphere for the case without crustal magnetic field is of 0.1, while for typical topology of the magnetic field it could be as large as 0.3, and even 0.6 for the case of moderate value of the crustal magnetic field.
- Simulations based on an ASPERA-3 measured auroral electron precipitation indicate that magnetic mirroring leads to an intensification of the energy flux carried by upward moving electrons— from about 20% in the absence of crustal magnetic field up to 33-78% when magnetic field is included depending on magnetic field topology.
- Crustal magnetic field results in increase of the upward electron flux, and, consequently, in reduction of the total auroral brightness for given energy flux of precipitating electrons.

Download English Version:

<https://daneshyari.com/en/article/5487409>

Download Persian Version:

<https://daneshyari.com/article/5487409>

[Daneshyari.com](https://daneshyari.com)