



Astrophysics > High Energy Astrophysical Phenomena

Semi-analytical model of cosmic ray electron transport

Alex Ivascenko, Felix Spanier

(Submitted on 5 Jul 2011)

We present a numerical extension to the analytical propagation model introduced in Hein and Spanier (2008) to describe the leptonic population in the galactic disc. The model is used to derive a possible identification of the components that contribute to the leptonic cosmic ray spectrum, as measured by PAMELA, Fermi and HESS, with an emphasis on secondary e^+ - e^- production in collisions of cosmic ray particles with ambient interstellar medium (ISM). We find that besides secondaries, an additional source symmetric in e^+ and e^- production is needed to explain both the PAMELA anomaly and the Fermi bump, assuming a power-law primary electron spectrum. Our model also allows us to derive constraints for some properties of the ISM.

Comments: 5 pages, 2 figures
Subjects: **High Energy Astrophysical Phenomena (astro-ph.HE)**
Journal reference: Astrophys. Space Sci. Trans., 7, 265-269, 2011
DOI: [10.5194/astra-7-265-2011](https://doi.org/10.5194/astra-7-265-2011)
Cite as: [arXiv:1107.0826v1](https://arxiv.org/abs/1107.0826v1) [astro-ph.HE]

Submission history

From: Alex Ivascenko [[view email](#)]
[v1] Tue, 5 Jul 2011 09:20:03 GMT (416kb,D)

[Which authors of this paper are endorsers?](#)

Link back to: [arXiv](#), [form interface](#), [contact](#).

Download:

- [PDF](#)
- [Other formats](#)

Current browse context:

astro-ph.HE

[< prev](#) | [next >](#)

[new](#) | [recent](#) | [1107](#)

Change to browse by:

[astro-ph](#)

References & Citations

- [INSPIRE HEP](#)
([refers to](#) | [cited by](#))
- [NASA ADS](#)

Bookmark (what is this?)

