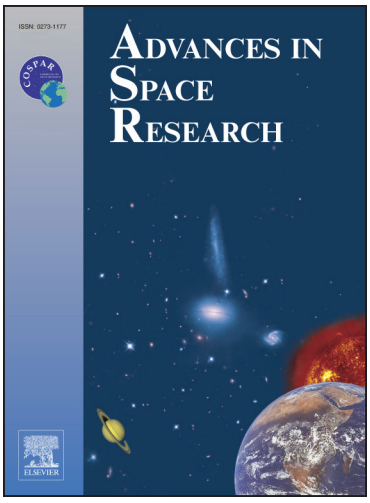

Overview of galactic cosmic ray solar modulation in the AMS-02 era

V. Bindi, C. Corti, C. Consolandi, J. Hoffman, K. Whitman

PII: S0273-1177(17)30370-8
DOI: http://dx.doi.org/10.1016/j.asr.2017.05.025
Reference: JASR 13233

To appear in: *Advances in Space Research*

Accepted Date: 19 May 2017

Please cite this article as: Bindi, V., Corti, C., Consolandi, C., Hoffman, J., Whitman, K., Overview of galactic cosmic ray solar modulation in the AMS-02 era, *Advances in Space Research* (2017), doi: http://dx.doi.org/10.1016/j.asr.2017.05.025

Overview of galactic cosmic ray solar modulation in the AMS-02 era

V. Bindi*, C. Corti, C. Consolandi, J. Hoffman, K. Whitman*

University of Hawai'i at Mānoa, Physics and Astronomy Department, 2505 Correa Rd, 96822, Honolulu, HI, USA

Abstract

A new era in cosmic rays physics has started thanks to the precise and continuous observations from space experiments such as PAMELA and AMS-02. Invaluable results are coming out from these new data that are rewriting the theory of acceleration and propagation of cosmic rays. Both at high energies, where several new behaviors have been measured, challenging the accuracy of theoretical models, and also at low energies, in the region affected by the solar modulation. Precise measurements are increasing our knowledge of the effects of solar modulation on low energy cosmic rays, allowing a detailed study of propagation and composition as it has never been done before. These measurements will serve as a high-precision baseline for continued studies of GCR composition, GCR modulation over the solar cycle, space radiation hazards, and other topics.

In this review paper, the status of the latest measurements of the cosmic rays in the context of solar modulation are presented together with the current open questions and the future prospects. How new measurements from the AMS-02 experiment will address these questions is also discussed.

Keywords: cosmic rays; solar modulation; space instruments; diffusion; drift.

*Corresponding author

Email address: bindi@hawaii.edu (V. Bindi)