ICRC2015

ICRC
The Astroparticle Physics Conference
34th International Cosmic Ray Conference
July 30 - August 6, 2015
The Hague, The Netherlands

Contribution ID: **975** Type: **Poster contribution**

Improved 3He/4He isotope separation in EPHIN data based on simulations

Thursday 30 July 2015 15:30 (1 hour)

In order to improve the separation of helium isotopes 3He and 4He measured by the Electron Proton Helium Instrument (EPHIN) aboard the Solar and Heliospheric Observatory (SOHO), we used Monte Carlo simulations to understand the instrument's response to incoming particles. The identification of different isotopes is based on the dE/dx-E-method. For an ideal telescope with the energy loss ΔE much smaller than the energy E: ΔE * E ∝ Z2 * m * Δx. Herein Z, m are the charge and mass of the particle and Δx the path length in the detector. In order to separate isotopes form each other, it is mandatory to know Δx with a high precision and to correct for a non-ideal telescope. Our simulations allow to determine the above mentioned effects and have been used to develop a correction method and thus improve the resolution significantly. Furthermore, we examine the ratio of the aforementioned isotopes during solar events and in the cosmic background using this new method.

Registration number following "ICRC2015-I/"

0539

Author: Mr BERNDT, Cedric (University of Kiel)

Co-authors: Prof. HEBER, Bernd (University of Kiel); KÜHL, Patrick (University of Kiel); Mr BANJAC, Sasha (University of Kiel)

Presenter: KÜHL, Patrick (University of Kiel)

Session Classification: Poster 1 SH

Track Classification: SH-IN