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# Measuring cosmic ray ions fluxes with AMS-02

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One of the key characteristic of Alpha Magnetic Spectrometer (AMS-02) is its capability to measure the relative abundances and absolute fluxes of the nuclear components of the galactic cosmic rays (CRs), from hydrogen up to iron (Z=26), in a kinetic energy range from GeV/n to TeV/n. In this contribution we discuss the methodology for the precise identification ions with AMS-02, which is relevant for the estimation of the flux ratio of secondary-to-primary CRs species, such as boro-to-carbon ratio. This is important because a precise measurement is needed to test the different propagation models and to constrain their free parameters.

The raw data are first processed to extract the relevant information for the ions study, for a more efficient handling of the entire data sample. The charge identification is a combination of Z measurements from the upper and lower time of flight scintillator layers and the inner and
outer silicon tracker layers (2 located at the edges and 7 layers in the inner part of the detector). The resolution and efficiency of the charge selection process is estimated by creating independent "pure"data samples for each detection layer, exploiting the available redundancy of the charge measurement. The method for the calculation of the detector acceptance for each ion species is also described.

For the correct estimation of the ion fluxes we had to properly understand the fragmentation properties in case of interaction inside the detector (if
the primary particle undergoes a charge change it might be wrongly identified). To tackle this problem, we developed dedicated analysis tools
to study the interaction properties on Monte Carlo simulated events, that allow us to estimate the location, survival probability and fragmentation
branches for each species.

## Collaboration

AMS

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