

# Properties of Heavy Secondary Fluorine Cosmic Rays Results from the Alpha Magnetic Spectrometer

*Monday 19 July 2021 19:00 (12 minutes)*

Precise knowledge of the charge and rigidity dependence of the secondary cosmic ray fluxes and the secondary-to-primary flux ratios is essential in the understanding of cosmic ray propagation. We report the properties of heavy secondary cosmic ray fluorine F in the rigidity R range 2.15 GV to 2.9 TV based on 0.29 million events collected by the Alpha Magnetic Spectrometer experiment on the International Space Station. The fluorine spectrum deviates from a single power law above 200 GV. The heavier secondary-to-primary F/Si flux ratio rigidity dependence is distinctly different from the lighter B/O (or B/C) rigidity dependence. In particular, above 10 GV, the (F/Si)/(B/O) ratio can be described by a power law  $R^\delta$  with  $\delta = 0.052 \pm 0.007$ . This shows that the propagation properties of heavy cosmic rays, from F to Si, are different from those of light cosmic rays, from He to O, and that the secondary cosmic rays have two classes.

## Keywords

AMS; Fluorine; heavy nuclei; secondary cosmic ray; cosmic ray propagation; latest new AMS result

## Collaboration

AMS

## other Collaboration

## Subcategory

Experimental Results

**Primary author:** Dr YAN, Qi (Massachusetts Institute of Technology)

**Co-author:** Dr CHOUTKO, Vitaly (Massachusetts Institute of Technology)

**Presenter:** Dr YAN, Qi (Massachusetts Institute of Technology)

**Session Classification:** Discussion

**Track Classification:** Scientific Field: CRD | Cosmic Ray Direct