



Contribution ID: 1189

Type: **Poster contribution**

## On the primary model to explain the relation between a rigidity-dependent spectral hardening of proton and helium spectra and a sharp knee of the all-particle spectrum.

*Tuesday 4 August 2015 16:00 (1 hour)*

CR spectrum may be not expressed by a simple power law in a certain energy region. Recently, PAMELA, ATIC and CREAM presented a rigidity dependent spectral breaks and remarkable hardening after the breaks in the rigidity region above about 100 GV. On the other hand, the all-particle energy spectrum of primary cosmic rays observed in a wide range from  $10^{14}$  to  $10^{17}$  eV with the Tibet-III AS array clearly shows a sharp knee at around 4 PeV. In order to explain the both data, we propose a phenomenological model in which extra nearby CR sources are responsible for creating a sharp knee. In this paper, we discuss some details of our model and also show that this model can well explain both the data by PAMELA and others in the lower energy region and that by the Tibet-III AS gamma experiment simultaneously. This model also predicts a dominance of cosmic-ray nuclei heavier than helium at the knee.

### Collaboration

– not specified –

### Registration number following "ICRC2015-I/"

920

**Author:** Prof. HUANG, Jing (Institute of High Energy Physics, CAS)

**Co-author:** Dr ZHANG, Ying (Institute of High Energy Physics)

**Presenters:** Prof. HUANG, Jing (Institute of High Energy Physics, CAS); Dr ZHANG, Ying (Institute of High Energy Physics)

**Session Classification:** Poster 3 CR

**Track Classification:** CR-TH