

## Study of Muon-Based Mass-Sensitive Parameter for the IceTop Surface Array

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### What is this contribution about?

This contribution is about the muon-based mass-sensitive parameter with the IceTop surface array.

### Why is it interesting?

This parameter can be applied to select datasets for different mass groups and further to do mass composition studies.

### What have we done?

Considering the charge signal distribution, a muon parameter per individual shower was defined and estimated. Using the shower size  $S_{125}$  and the estimated muon parameter at a reference distance, the mass-sensitive ratio is estimated event by event, based on the interaction model of Sibyll 2.1 and 10% of 2012 IceTop data.

### What is the result?

The estimated mass-sensitive parameter clearly shows the primary mass dependence and the data seems to favour heavy primaries in the energy range of 10 PeV. Further mass composition studies are in progress.