Testing Hadronic Interaction Models with Cosmic Ray Measurements at the IceCube Neutrino Observatory

Stef Verpoest, *Dennis Soldin, Sam De Ridder*
for the IceCube collaboration

What is this contribution about?

- A test of the internal consistency of several hadronic interaction models.

Why is it relevant/interesting?

- Predictions of air-shower observables depend strongly on the choice of hadronic interaction model.
- IceTop & IceCube can measure the electromagnetic, GeV-muon, and TeV-muon components of air showers simultaneously.

What have we done?

- A comparison of the measurement of several composition-sensitive observables to the predictions of simulations using Sibyll 2.1, QGSJet-II.04, and EPOS-LHC.

What is the result?

- Inconsistencies are found in all considered models.
- This makes it difficult to unambiguously determine cosmic-ray mass composition.