

# Muon enhancement ad extremum in Sibyll

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In recent years it has become more and more clear that simulations of air showers of ultra-high energy cosmic rays do not agree with measurements when it comes to observables related to muons. The usual explanation is that hadronic interactions are miss represented in the models that enter the simulations. Several mechanisms within standard hadronic interaction physics have been identified in the past that are capable of enhancing the number of muons in EAS. However with none of these extensions it was so far possible to increase the number of muons by a sufficient amount to describe the experimental data.

Using the example of Sibyll, one of the models for hadron interactions used in air shower simulations, we introduce ad-hoc enhancements of baryon, rho0 and strangeness production to test whether it is at all possible to reach the number of muons observed in experiments.

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