

Monte Carlo generator tuning for cosmic-ray induced air shower simulations

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Monte Carlo (MC) generators are a fundamental tool in particle and astroparticle physics. To achieve a high-quality simulation of physical processes involving hadrons, the hadronic interaction model of the generator must be tuned efficiently. The free parameters of MC generators are optimized with the help of experimental data and Bayesian methods.

One area of application for MC generators is the simulation of cosmic-ray induced air showers in the Earth's atmosphere. Since hadronic interactions have a direct influence on the composition of secondary particles in the shower formations, tuning the parameters of these hadronic models has an impact on crucial observables such as the muon number.

In this talk, studies on the tuning of Monte Carlo generators for cosmic-ray induced air showers are presented.

Author: REININGHAUS, Maximilian (KIT / IAP)

Presenter: WINDAU, Michael

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