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The effect of the atmospheric composition on CTA performance

Studying the Universe at the highest energies with photons above 10s of GeV requires a very special detector, the atmosphere. When very-high-energy (> 10 GeV) gamma rays hit the atmosphere, they produce an extended air shower of electromagnetic particles, which in turn induce Cherenkov radiation. The distribution of Cherenkov light induced and its probability of reaching the detectors on the ground depend on the atmospheric conditions. In this project, simulations of air showers including all relevant particle interactions will be used to estimate the effect of various atmospheric compositions on the performance of the Cherenkov Telescope Array (CTA), taking into account e.g., the increase of CO2 due to anthropogenic activity.

Field

C1: Astroparticle physics analysis and observations

DESY Place

Zeuthen

DESY Division

AP

DESY Group

CTA

Special Qualifications:

Basic knowledge of Unix and Python would be useful. The project would consist of 60% Computing, 40% Physics.

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