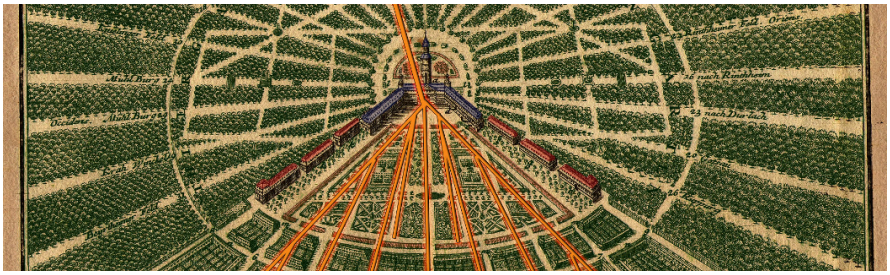

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Simulations for the atmosphere with clouds

Thursday, June 20, 2019 9:00 AM (20 minutes)

The Cherenkov Telescope Array (CTA) is the next generation ground-based array of IACTs, the world's largest and most sensitive high-energy gamma-ray observatory. The full setup will consist of more than 100 telescopes located in the northern (CTA-N) and southern hemispheres (CTA-S). The Observatorio del Roque de Los Muchachos (ORM) on the LaPalma island, Spain is selected as a site for the northern array (CTA-N).

In order to determine the influence of clouds on the atmospheric transparency and performance of CTA-N, transmittance simulations and simulations of instrument response in such an atmosphere are being performed.

Summary

The atmosphere is an integral part of Cherenkov imaging telescope, thus, the telescope response depends on the unpredictable atmospheric changes. Since there is no test-beam for Cherenkov telescope, Monte Carlo simulations are used instead.

In order to examine the influence of cloud altitude and optical depth on CTA-N performance, transmittance simulations for the atmosphere with clouds were performed. The clouds simulations were done with MODTRAN computer program, while the atmospheric models produced by MODTRAN were used as inputs for MCs (CORSIKA & sim_telarray).

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