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A Generic Algorithm for IACT Optical Efficiency Calibration using Muons

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Muons produced in extensive air showers generate ring-like images in Imaging Atmospheric Cherenkov Telescopes when travelling near parallel to the optical axis. From geometrical parameters of these images, the absolute amount of light emitted may be calculated analytically. Comparing the amount of light recorded in these images to expectation is a well established technique for telescope optical efficiency calibration. However, this calculation is usually performed under the assumption of an approximately circular telescope mirror. As the H.E.S.S. experiment entered its second phase in 2012, with the addition of a fifth telescope with a non-circular 600m² mirror, adaptations to the standard muon calibration implementation were required. We present a generalised muon calibration procedure, adaptable to telescopes of differing shapes and sizes, and demonstrate its performance on the H.E.S.S. II array.

Collaboration

H.E.S.S.

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