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# Contribution of atmospheric scattering of light to shower signal in a fluorescence detector

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## Abstract content

The light emitted by an extensive air shower undergoes scattering on molecules and aerosols in the atmosphere. The scattering effect not only attenuates the light, but also contributes to the signal recorded by a detector. Hence, this effect directly influences the determination of shower energy. In routine analyses so far only contributions from direct and singly-scattered Cherenkov photons have been accounted for. Monte Carlo simulations were used in this work to study single and multiple scattering of fluorescence photons as well as multiple scattering of Cherenkov photons, for various shower geometries and varying distributions of aerosols in the air. The resulting contribution of scattered photons to the signal recorded in a fluorescence detector was obtained. A parameterization of this additional contribution is provided that can be used in shower reconstruction in the fluorescence technique of cosmic ray detection.

## If this papers is presented for a collaboration, please specify the collaboration

## Summary

#### Reference

Proceedings of the 30th International Cosmic Ray Conference; Rogelio Caballero, Juan Carlos D'Olivo, Gustavo Medina-Tanco, Lukas Nellen, Federico A. Sánchez, José F. Valdés-Galicia (eds.); Universidad Nacional Autónoma de México, Mexico City, Mexico, 2008; Vol. 4 (HE part 1), pages 515-518

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