

# FEASIBILITY STUDY OF COSMIC RAY COMPOSITION MEASUREMENTS WITH CERENKOV TELESCOPES USING FRACTAL IMAGE PARAMETERISATION

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With help of the air shower simulation program CORSIKA and a detailed simulation of the detector response, Cerenkov images of the Whipple and Veritas telescopes are generated for both, primary photons and the Cosmic Ray (CR) background. The images are parametrised with the well known Hillas parameterization as well as by fractal and wavelet methods [1]. Special emphasis is given to the possibility of a primary mass recognition of the particles initiating single air showers. The energies of the CR background for gamma source observations is mainly 10-500 TeV. At this energy reliable results on elemental composition of CR are rare. Both techniques, direct measurements with balloons or satellites and air shower observations mainly with arrays of particle detectors are stretched to their limits to cover this energy range. An independent measurement of the elemental composition using Cerenkov telescopes promises a better understanding of the composition and provides a test of the simulation programs underlying all the indirect composition estimates.

[1] A. Haungs et al., *Astroparticle Physics* 11 (1999) 145