

DETERMINATION OF THE ATTENUATION LENGTH OF THE ELECTRON SIZE WITH THE KASCADE EXPERIMENT

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The attenuation length describes the exponential decrease of the electron number of extensive air showers in depths far from the shower maximum X_{max} and is frequently used in the literature to infer the proton-air total cross section. Data from the KASCADE experiment, which measures air showers with primary energies in the knee region, are used to determine this length with various methods. The different analyses yield values between 165 and 195 g/cm² and show a rise towards larger attenuation lengths with increasing electron number. Comparison with CORSIKA simulations exhibit a strong influence of the attenuation length from fluctuations in the electron shower size.