

THE LONGITUDINAL EAS PROFILE AT $E > 10^{19}$ eV: A COMPARISON BETWEEN GIL ANALYTICAL FORMULA AND THE PREDICTIONS OF DETAILED MONTECARLO SIMULATIONS.

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The GIL formula is used to describe the longitudinal profile of hadron-initiated EAS in the range $E > 10^{19}$ eV, according to the Greisen-Iljina-Linsley parameterisation. The results are compared with the expectation values given by a detailed Montecarlo program for simulating EAS (CORSIKA/QGSJET, CORSIKA/Sybill), in a wide energy range, for different primaries and directions. An accuracy of few percent is reached in the description of the longitudinal profile and of the number of charged particles at the shower maximum. Also the depth of the shower maximum $X_{\max}(E,A)$ compares within 5%. The use of GIL as a fast generator for EAS longitudinal profile is therefore suggested as a powerful tool to work-out the performance of those experiments which use the longitudinal profile and the fluorescence signal to study the Extreme Energy Cosmic Rays.