

Abstract Submitted
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A Framework for the Energy Spectrum of Primary Cosmic Rays.

DAVID W. KRAFT, University of Bridgeport, Bridgeport, CT — Although cosmic rays have been the subject of intense observation and research efforts since their discovery in 1912, there remain unanswered questions of a fundamental nature. Among these is the origin of the declining power laws which characterize the energy spectrum of primary cosmic rays, i.e., of nucleons incident upon the Earth's atmosphere. Their flux observed over more than fourteen orders of magnitude of energy varies with energy as $E^{-\gamma}$ in which the exponent assumes values between 2.5 and 3.2. We provide herein a framework to account for these values. Our procedure assumes a top-down model in which cosmic rays are produced by the degradation of the energy of initially high-energy particles via collisions with nucleons. It employs the nucleons' kinetic temperature T and introduces a factor T^{-m} to damp the number of collisions that result in high temperatures. It is the presence of the index m which can provide the observed values of γ .

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