

The study of cosmic rays in the high-energy and the possibility monitored with telescope JEM EUSO

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Abstract

Ever since the discovery of cosmic rays by Victor Hess [Hes12] in 1912 great efforts have been undertaken to understand the origin of cosmic rays up to the highest energies of 10^{21} eV. A common detection method utilizes the fluorescence light produced in the atmosphere during extensive air showers induced by cosmic rays. Due to the extremely low flux of particles in the ultra high energy domain vast volumes of atmosphere have to be monitored. The largest fluorescence telescope, the Pierre Auger Observatory, is located in Argentina and covers over 3000km². The space based JEM-EUSO mission is a proposed pathfinder mission to further increase the amount of observed atmosphere. The Extreme Universe Space Telescope (EUSO) will be attached to the Japanese Experiment Module (JEM) of the International Space Station (ISS) and provides a high resolution sensor and a wide field of view ($\pm 30^\circ$).

We have discussed this in the simulated light fluorescence and fluorescence study Output *FY λ LUS* to take the standard model of the atmosphere, we came through the simulation process to know that synthetic atmosphere and physical characteristics of the structure, temperature, density and pressure changing in terms of height h and even the wavelength λ of photons fluorination all affect the output of fluorination *FY λ L*.

Key words: cosmic rays; air showers; telescopes JEM-EUSO; fluorescence.