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A Comparative Study of Cosmic Ray Radiations through the Different Observation in the Solar System

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Abstract: *The innovative problems of cosmic rays observation that considers to association of various radiations in solar activities. The cosmic ray consideration for the observation of comparative study that we are use two category of cosmic rays, primary and secondary cosmic ray. The cosmic ray radiation that coming outer surface the influence of interplanetary magnetic field is also known as primary cosmic rays. The spectral plots between intensity and energy of α - particles and other heavier nuclei are close to those of plot of protons also. This means that the relative abundances of cosmic ray particles changes gradually with energy. The improvements of primary and secondary cosmic rays with the graphical observation through some examples. The modulation of cosmic ray varies with solar activity and anti associated glowing. When the cosmic ray arrived by the side of surface of earth, the geomagnetic field of cosmic rays that deflects but some cosmic ray arrives through the poles. In the radiance and chromo-spheres which appear through solar flares in the solar cosmic ray environments are fluxes of high-energy-charged particles that accelerated. The value of geomagnetic cut-off rigidity is maximum at equator and minimum at north and south poles. This research we are analyzing many different comparative observations for cosmic ray activities with various solar particles and detection methods.*

Keywords: Cosmic Ray, Flux Cosmic rays, GLE, CRI, GCR, EAS, HEL, Milky Way, etc

I. INTRODUCTION

Actually, in this research we are going to discuss many observation of different cosmic rays radiation with various solar particles activities by some special resources. **Cosmic ray,** a high-speed particle also an minuscule nucleus otherwise an electron that travels through space. Mainly of these particles come from sources within the Galaxy (Milky Way) and are Galactic Cosmic-Ray (GCR). The rest of the cosmic ray-particles initiate whichever as of the Sun or else almost confidently the particles with the uppermost powers, outside the Milky Way (Galaxy). There are several methods of detecting the cosmic ray particles presently in apply, which can discuss in two main categories, the first is detection of minor particles cosmic ray through different kinds of solar particle detectors, and second is detection of electromagnetic radiation emitted by EAS in the atmosphere. Observation of cosmic-ray is a scientific installation built to detect high-energy-particles coming from space called cosmic rays. This naturally includes images High Energy Light, Electrons, Protons, and various heavier as radiant as particles. We can represents concerning ninety percent of cosmic rays are protons, nine percent are alpha particles, and the remaining one percent are other particles.

In general, solar cosmic rays, that is, particles ejected from the Sun, are not energy-rich enough to produce significant amounts of cosmic radio nuclides. However, during solar proton-events, when the Sun emits a large amount of higher-energy particles, solar particles might produce detectable increases in radionuclide-production rates on short time-scales. The atmosphere at the polar regions can be several instructions of importance higher than the flux of GCRs for the period of such an action, the number of particles penetrating.

Overall, the cosmic rays and solar flare displays continuous stage variations in all the graphs of each observation, which the quantity of cosmic ray calculation is inversely relative to the amount of solar flare counts event. It is complicated enough to survey these particles solar system and the special effects they on each other. The solar flare and entire

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observation which is solar activity affects cosmic rays event in Earth's environment. It was also observed with the purpose of cosmic rays can be affected through other solar activities, that is not only solar flare modulates cosmic rays system.

Flux Cosmic Ray Observations

The arriving of flux cosmic rays at the higher environment is dependent on the solar wind system, the magnetic field, and power of the cosmic rays. At distance of the particles, the solar systems undergo a conversion, termination shock, from super-sonic to sub-sonic charge. The the heliopause acts as a difficulty to cosmic rays and electorate between the termination shock decreasing, the flux at minor power with concerning ninety percent. But, the power of the solar system is not invariable, and experiential that cosmic ray flux is simultaneous with solar activity particles. In calculation, the earth attractive field acts to redirect cosmic rays system from its surface, giving increase towards the observation that the flux cosmic ray is apparently depends on latitude, longitude, and azimuth angle of solar environment.

The mutual properties of all factors mentioned that contribute to the flux cosmic rays on the Earth of exteriors. The following table of participial frequencies reach the planet and are inferred from lower-energy radiation reaching the ground.

Relative particle energies and rates of cosmic rays		
	Particle energy (eV)	**Particle rate ($m^{-2}s^{-1}$)**
1.	1×10^{9} (GeV)	1×10^{4}
2.	1×10^{12} (TeV)	1
3.	1×10^{16} (10 PeV)	1×10^{-7} (a few times a year)
4.	1×10^{20} (100 EeV)	1×10^{-15} (once a century)

Table 1: Observation with relative particles

In the history, it was assumed that the cosmic ray flux remained comparatively constant over time. Conversely, existing research that indicates to the changes in the various particles of cosmic ray flux since the forty thousand years. The importance of the energy of flux-cosmic ray in interstellar space is very comparable to other profound space of solar environment in the density of cosmic ray energy that averages regarding single electron volt per cubic centimetre of interstellar space in the solar system.

Observation with Detection Method

The observation of detects cosmic rays system using detection method that through the use of two different methods first is watching Cherenkov Radiation-Made (CRM) when particles interact with water, and second is observing Ultraviolet Light-Emitted (ULE) in the earth environment.

Figure 1: Observation of detects cosmic ray methods in the solar system

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There are two main modules of detection cosmic ray methods. Primary module, the direct detection of the primary cosmic rays in solar space or at high altitude by balloon-borne instruments. Second module, the indirect detection of secondary particle of solar space. For solar space and balloon-borne detection of air shower while there have been proposals and prototypes, presently in service experiments for high energy cosmic rays are based on ground level enhancement. Generally direct detection method is more accurate and reliable than indirect detection method cosmic ray. Conversely the flux cosmic rays decreases with solar energy, which hampers direct detection module for the energy assortment that observed in above figure 1, both methods of direct and indirect detection are initialized through the several techniques of solar system.

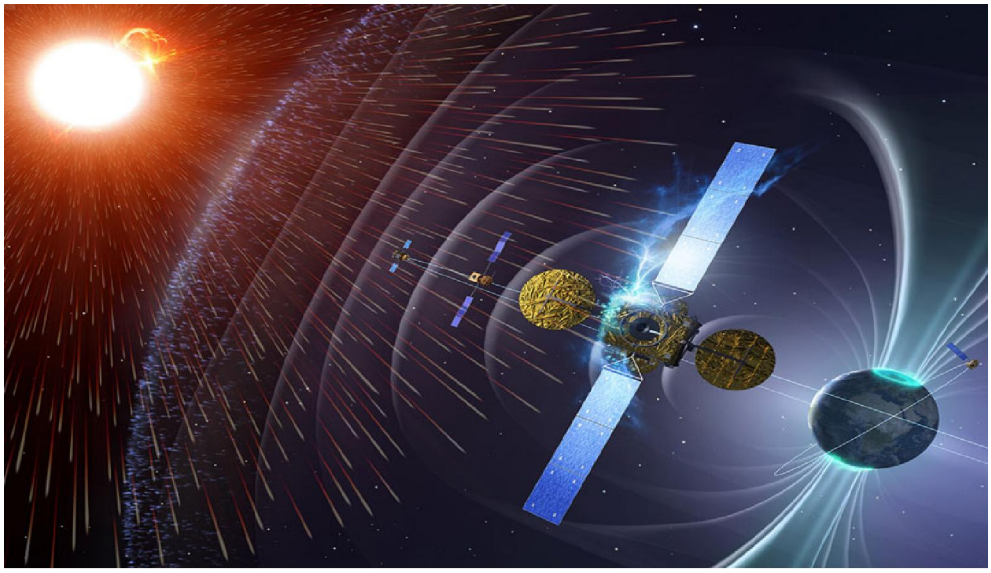

Figure 2: Cosmic rays in the Solar System

Here the high energy particles in the solar system they observing various solar flares and radiations of solar particles. Scientists hope to find traces of life in explained atmospheres by looking for telltale patterns in an atmosphere's chemical composition. Those patterns, however, could be altered through cosmic rays system.

Primary Cosmic Ray Observations

The primary cosmic rays originated from cosmological and additional environment of solar system. Radiation of the cosmic ray which coming outer surface manipulate of inter-planetary magnetic field is also called primary cosmic rays. The century 2010 By Medwalt, have observed the particles of primary cosmic rays mostly consist of hydrogen nuclei alpha particles of confidently charged and remaining particles are about 0.9 percent. Energy of alpha particles and other heavier nuclei are lock to that plot of protons also the spectral plots between cosmic rays intensity. Means of this learning that determines the particles of cosmic ray changes progressively with particles energy of the relative abundances, View analysis of the primary cosmic rays and improvement of secondary cosmic rays that indicates the schematic configure in figure 1.

Secondary Cosmic Ray Observations

Actually, the particles of secondary cosmic ray generated by decompose of primary cosmic rays while the particles of primary cosmic ray appear and interact with the particles of earth atmospheric immediately produced in other terminology. So, the cosmic ray mostly creates by mesons and gamma photon later than decompose of primary cosmic rays. With the interstellar material and galaxies produced particles of secondary cosmic rays than each particle of primary cosmic rays can also interact. The Particles of primary cosmic ray are generally hydrogen nuclei that interacted by means of oxygen, nitrogen of air nuclei and produce large quantity of elementary particles of cosmic ray they items following impact are recognized as secondary cosmic rays components.

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Galactic Cosmic Ray Observations

The main sources of galactic cosmic ray (GCR) particles are our galaxies area. These particles of cosmic ray are not arrives outer from the solar environment system. The particles of galactic expression are concerning with galaxies but not only a solar environment system. The particles energy of galactic cosmic ray are regarding of 10^{16} eV. The journey of galactic cosmic ray (GCR) particles are regarding speed of light, They are natural particles of galactic cosmic ray that composed generally through photons (hydrogen nuclei) and some additional charged in solar observation.

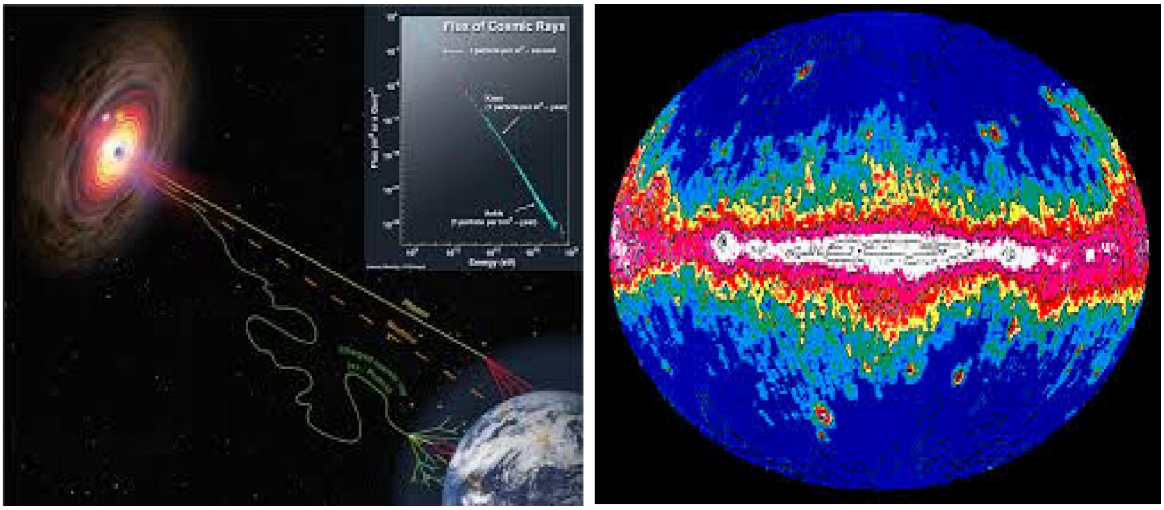

Figure 3: Observation of Galactic Cosmic Rays

Here, the observations of figure 3 considered some particles arrived on inside of the earth during magnetic poles that shows the particles of galactic cosmic ray move about earth consequently. These cosmic rays particles are modulated by means of the solar magnetic ground which comes not in from the sun source that construct period of 11 & 22 year in the solar cycle's environment.

Cosmic Ray Transformations

The cosmic rays fluxes coming in the way of earth surface are modulated through the interplanetary magnetic field of solar system and magnetic field of earth, the interplanetary medium is called solar storm when the consisting of magnetic and plasma in the solar system. The modulation of cosmic ray particles that variation with solar activity and anti associated glowing. But some particles of cosmic ray comes at through the poles when the cosmic ray arrived at surface of the earth the geomagnetic fields prevent cosmic rays particle. The transformation from in the bearing of east to west are the assessment of cosmic ray intensity varies, than east to west variation of cosmic ray known as east and west effect (outcome). Therefore the cosmic ray intensity at the poles is highest and at equator is smallest. Figure 1 & figure 2 shows the time profile of the solar modulation of cosmic rays. Hence, the cosmic ray for the any transformation events depend upon eleven solar modulation activities and small period which is taking moment in time within hours of solar environment.

II. CONCLUSION AND FUTURE WORK

This comparative study based on various different observations cosmic ray with many activities in the solar system. The consideration of these learning mostly focused the association of galactic cosmic ray, primary & secondary cosmic ray, flux cosmic rays, solar modulation, detection methods, correlative variations, solar flares and some other cosmic ray particles activities. Considerations of this research are implements observation with relative particles in table 1, Observation of detects cosmic ray methods in the solar system, Cosmic rays in the Solar System, Observation of Galactic Cosmic Rays. We conclude the more efficient of comparative associations in the cosmic intensity rays and measuring the observation of with figure 1, figure 2 and figure 3. The solar flare association which is solar movement affects cosmic rays incident in Earth's environment. It was also observed that cosmic rays can be affected by other solar

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activities. In the view of this learning that holds different kinds of various appearances of solar radiation particles by the association of some efficient solar activity observations. So, we recommend it is not satisfactory and entire the learning, they will discuss again with some additional interactive appearance in future or after that our research studies.

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