

Date
22/04/2024

B.Sc. DII
Paper - IV (C)

Origin of cosmic rays →

Till to 1913. There are three origins of cosmic rays. (a) the origin of the particles (b) The origin of the energy (c) The site of the acceleration.

The evidence for each origin is discussed. The particles of galactic origin ~~are~~ where the energy comes mainly from supernova explosions; the site of the acceleration is at strong collisionless ~~to~~ shock waves, and the accelerated particles come from the interstellar and circumstellar material swept over by these shocks. If these shocks are capable of significantly amplifying magnetic fields this picture appears capable of explaining the cosmic ray particles at all energies below the 'ankle' at 3×10^{18} eV. The particles above this energy are generally taken to ~~be~~ be of extra galactic origin and possible acceleration sites these.

✓ In 1923 Cosmic rays are super energized particles that travel almost at the speed of light and originate in space, either from the sun in the form of solar flares, from supernova explosions from black holes or even from ~~black holes~~ other galaxies. Cosmic ray come to earth as primary cosmic rays. Originating from beyond the Earth's atmosphere. Then primary cosmic rays collide with

the matter in the atmosphere and produce secondary cosmic rays, which then shower down from the atmosphere and impact earth.

There are four type of cosmic rays. Which differ in place of origin and energy amount

- (1) Anomalous Cosmic ray
- (2) Solar cosmic ray
- (3) Galactic cosmic ray
- (4) Ultra high energy cosmic ray.

Areas of higher and at the poles experience greater amounts of cosmic ray bombardment. This difference in the exposure to cosmic ray is known as cosmic flux.