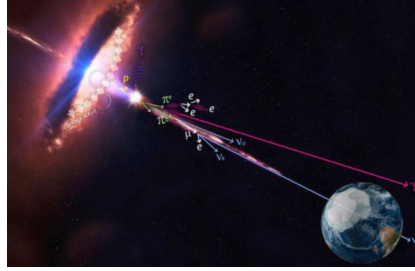


# 11th International Workshop on Very High Energy Particle Astronomy (VHEPA 2024)



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## Recent studies on the energy spectrum and the composition of galactic cosmic rays with HAWC

The HAWC observatory is an air-shower Cherenkov detector installed at high altitudes (4100 m a.s.l.) with the mission of studying the universe at TeV energies by means of the gamma and cosmic rays that are received from the sky. The analyses of the hadronic-induced events at HAWC have allowed to investigate the sky maps, energy spectrum and the composition of cosmic rays at energies from TeV's to 1 PeV with high precision and statistics. From these studies, HAWC has measured the all-particle energy spectrum of cosmic rays just below the knee down up to the energy region dominated by direct experiments and has observed a cut-off in the total spectrum at tens of TeV's. Furthermore, it has estimated the energy spectrum for H+He nuclei, which has led to the observation of a softening at around 24 TeV. Unfolding studies in this energy region with HAWC have shown that such structure is due to the presence of individual cut-offs in the spectra of H and He, which were observed for the first time by direct experiments. In addition, HAWC results have also indicated the existence of a cut-off in the heavy component of cosmic rays between 100 and 300 TeV and hardenings in the spectra of the light cosmic ray nuclei at around 100 TeV. In this talk, we will present a review of the main results of HAWC on the spectrum and composition of cosmic rays. Finally, we will compare the findings with data from direct and indirect experiments.

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