

Modeling the Galactic Plane emission from GeV to PeV

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Our galactic plane is a diffuse heterogeneous emitter at high and very high energies. Several gamma-ray campaigns, like that of Fermi-LAT in the GeV range and H.E.S.S. and Milagro in the TeV range, reported an enhanced diffuse emission from different regions of the plane. With a comprehensive cosmic-ray transport model, able to reproduce the observed gamma-ray spectra from the galactic plane, we compute the expected neutrino spectrum generated by the interaction of cosmic rays with the galactic interstellar gas. After reproducing the observations made by H.E.S.S., Milagro and Fermi-LAT for different galactic regions, we obtain the expected neutrino flux and we confront the results with the sensitivities of the global neutrino network observatories. Adding to the expected Galactic spectrum a possible extra-Galactic component we compare the resulting flux with the recent observations of the IceCube experiment and the upper limits set by the ANTARES experiment. Within the presented scenario we highlight also the expected diffuse gamma-ray component inside the Pevatron annulus measured by H.E.S.S. around Sagittarius A* and the implications for identifying the Pevatron injector inside this target rich region.

Summary

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