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Multi-Messenger Signatures of UHE CRs

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The origin of ultra-high energy (UHE) cosmic rays (CRs) is an unsolved puzzle. Multi-messenger observations in the form of gamma-rays and neutrinos can help to constrain the cosmic evolution and emission spectra of UHE CR candidate sources. I will discuss the production of cosmogenic gamma-ray and neutrino fluxes from the propagation of UHE CRs through the cosmic radiation background. These diffuse fluxes contribute to the observed gamma-ray background in the GeV-TeV range and can be tested by neutrino observatories at EeV energies. I will review the latest status of these observations and comment on possible relations of UHE CRs to the recent observation of high-energy astrophysical neutrinos in the TeV-PeV range.

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