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Estimating the GZK Photon Flux from Extragalactic Cosmic Rays — •Chiara Jane Papior, Marcus Niechciol, and Markus Risse — Experimentelle Astroteilchenphysik, Center for Particle Physics Siegen, Universität Siegen

Extragalactic cosmic-ray sources emit particles with energies beyond 100 EeV. At ultra-high energies, charged particles interact with the cosmic microwave background via photo-pion production, also referred to as the Greisen-Zatsepin-Kuzmin (GZK) effect, generating so-called GZK photons. The photon flux at Earth originating from this effect and other interactions depends on parameters of the cosmic-ray spectrum like the spectral index or potential cutoffs. Other variables like the distance distribution of sources and the cosmic-ray mass composition have an impact on the expected photon flux as well. Simulations based on different input parameters have been performed with the CRPropa code and the expected GZK photon yields will be presented. The goal is to update the allowed range of the expected GZK photon flux based on current measurements of cosmic-ray observatories at ultra-high energies.
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