

Predicting the UHE photon flux from GZK-interactions of hadronic cosmic rays using CRPropa 3

Executive Summary



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- **Updated model predictions for the flux of UHE photons** from Greisen-Zatsepin-Kuzmin (GZK) interactions of charged cosmic rays with the cosmic microwave background are derived here taking into account latest results of the Pierre Auger Collaboration.
- All secondary photons above $10^{15.8}$ eV are considered, **extending previous predictions towards lower energies** by two orders of magnitude.
- The UHE photon flux on earth is expected to be **driven by elements in the mass range of nitrogen**.
- A cosmic ray spectrum of **pure protons** at the sources that is in maximum agreement with the data of the Pierre Auger Observatory are **not expected to produce the most optimistic UHE photon flux**.

