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Estimating the secondary photon flux produced during the propagation of primary cosmic rays

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In this contribution, a simulation based method to estimate the flux of secondary photons produced during the propagation of primary cosmic rays is presented. During their propagation cosmic ray particles interact with photon background fields such as the cosmic microwave background (CMB). Through photo-pion production and the subsequent decay of neutral pions, secondary photons are created. The overall number of photons produced in these interactions varies depending on different parameters, like the propagated distance, the energy of the initial cosmic ray particle and overall cosmic ray composition. These dependencies are evaluated here in order to investigate a maximum or also minimum possible photon flux.

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