PHOTON/HADRON DISCRIMINATION OF THE AUGER OBSERVATORY

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Photons of ultra-high energy would be a strong evidence in favour of a "top-down" production mechanisms; on the other hand their mean free path in the intergalactic medium becomes non-negligible above 10^{20} eV. At such energies the first steps of the electromagnetic shower in the atmosphere are affected by the LPM suppression, resulting in a delayed longitudinal profile. This could be observed directly with the Fluorescence Detector (X_{max} values well beyond 1000 g/cm^2), or indirectly with Surface Detector (steeper lateral distribution, more curved shower front); globally the Auger Observatory could be sensitive to a photonic fraction of a few percent in cosmic rays above a few 10^{19} eV. Moreover the geomagnetic conversion of photons before entering the atmosphere would produre a characteristic anisotropy of the effect with respect to the direction of the magnetic field in the region of the site, different from possible sky anisotropies.