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Latest Results from the Searches for Photons at the Highest Energies with the Pierre Auger Observatory

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The Pierre Auger Observatory is the largest air-shower detector in the world, offering unparalleled exposure to photons with energies above 5×10^{16} eV.

Since the start of data collection almost two decades ago, numerous searches for photons have been conducted using the detection systems of the Observatory.

These searches have led to the most stringent upper limits on the diffuse photon flux.

These limits place severe constraints on current models regarding the origin of cosmic rays and emphasize the significant capabilities of the Pierre Auger Observatory in the context of multimessenger astronomy at the highest energies.

This contribution provides an overview of the ongoing efforts to search for high-energy photons in the data from the Pierre Auger Observatory.

The latest results from searches for the diffuse photon flux will be presented, along with follow-up investigations for photons associated with transient events, such as gravitational wave detections.

Furthermore, future prospects will be discussed in light of the AugerPrime detector upgrade, which will enhance the sensitivity of the Observatory to photons up to the highest energies.

Collaboration(s)

The Pierre Auger Collaboration

Author: SAVINA, Pierpaolo (Gran Sasso Science Institute)

Presenter: SAVINA, Pierpaolo (Gran Sasso Science Institute)

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