
Contribution ID: **73** Type: **Poster**

# Status and expected performance of the Radio Detector of the Pierre Auger Observatory

*Monday, 17 June 2024 17:04 (3 minutes)*

The Pierre Auger Observatory is a hybrid ground-based detector that measures cosmic rays above 10^17 eV with an array of 1660 water-Cherenkov detector (WCD) stations spread over 3000 km2 and overlooked by 27 fluorescence telescopes. Over the last two decades, it has significantly contributed to our understanding of cosmic rays and multi-messenger astroparticle physics. However, fundamental questions about the origin, composition, acceleration mechanism, and propagation of ultra-high-energy cosmic rays remain unanswered. The ongoing AugerPrime upgrade will improve the estimation of the mass composition of cosmic rays at the highest energies, which is closely related to the other open questions and improves multi-messenger capabilities. For inclined air showers with zenith angles greater than 65 degrees, this will be achieved by using the newly added Radio Detector (RD) antenna array. The RD consists of an antenna installed on top of each WCD to measure the radio emission from the air shower in the 30-80 MHz band. For inclined showers, the WCD predominantly measures the muonic component, and the RD measures the electromagnetic component. Over 600 fully upgraded stations are now taking data in the field, and the upgrade is expected to finish this year. Currently, the RD measures data when triggered by the WCD. For inclined showers induced by neutral particles, especially photons, the muon content is often insufficient to trigger the WCD. Therefore, an RD self-trigger is also under development to enhance the sensitivity to neutral particles. In this contribution, we present an overview of the AugerPrime RD upgrade and its expected performance for cosmic rays and photons. The significance of the RD in the current era of multi-messenger astroparticle physics is also discussed.

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**Session Classification:** Flash Talks-1

**Track Classification:** Ultra-High Energy Cosmic Rays