Contribution ID: **205** Type: **Poster**

Using SKA-low to detect PeV gamma-rays from Galactic Sources

The Square Kilometre Array (SKA) is a next-generation radio telescope, and upon construction in 2030 the world's most sensitive one. SKA will comprise a low frequency component with almost 60 000 radio antennas on an extremely densely instrumented area of about 1 km^2 located in Australia. Sensitive to the radio emission in the 50 to 350 MHz band, these astonishing dimensions offer intriguing capabilities for the detection of extensive air showers. While SKA will play a leading role in high-precision cosmic ray measurements, it may also play a role in gamma-ray astronomy. The particle cascade initiated by a gamma ray impacting on the Earth's atmosphere will emit radio waves, comparable to the emission observed from hadronically induced air showers. The energy threshold of current radio-air-shower experiments of tens to hundreds of PeV has limited those experiments to cosmic-ray science so far. With the interferometric measurement of air showers combining the coherent air-shower signals from thousands of individual antennas, we aim at lowering the energy threshold for the radio detection of air showers to PeV energies. The superior angular resolution of SKA may provide a way to both trigger on gamma-rays and separate them from hadronic cosmic rays. SKA's field of view of the Galactic Center provides a unique opportunity of obtaining a first detection at PeV energies. This contribution will sketch the challenges of as well as the necessary steps needed for gamma-ray detection with SKA and will highlight the scientific impact.

Collaboration(s)

SKA SWG High Energy Cosmic Particles

Author: SCHLÜTER, Felix

Presenter: SCHLÜTER, Felix

Session Classification: PO-2

Track Classification: Gamma-Ray Astrophysics