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On polarization effects of radio emission from extensive air showers

Radio emission is one of the processes that Extensive Air Showers (EAS) produce in the air. The LOPES (LOFAR Prototype Station) experiment at KIT Campus North, on site of the KASCADE-Grande experiment in Germany, was a certain period of its lifetime configured to measure polarized signals from EAS. Polarization characteristics of the radio signals are important aspects in verifying the radio emission mechanisms. The geomagnetic effect is considered the dominant contribution in the radio emission process, while the net charge excess developed in the shower may contribute significantly, depending on the geometry of the air shower and the position of the observer. Aspects of shower geometry related to polarization effects will be discussed, based on LOPES radio data, KASCADE-Grande reconstructed air shower observables, as well as sophisticated simulation predictions.

Author: Dr ISAR, Paula Gina (Institute of Space Science, Bucharest)

Presenter: Dr ISAR, Paula Gina (Institute of Space Science, Bucharest)

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