

ABSTRACT - ARENA 2012

Title: Reconstruct primary energy and X_{\max} using radio LDF characteristics.

Abstract content *:

In the last decades, remarkable progress has been made in the detection of electromagnetic emission from cosmic ray air showers. The LOPES experiment, a digital radio interferometer located at KIT (Karlsruhe Institute of Technology), obtained considerable results for the detection at MHz frequencies.

Eager to become competitive with the well-established investigation methods, radio detection aims to retrieve the full information from a high-energy cosmic ray, e.g. arrival direction, energy and type of the primary particle.

Features of the radio lateral distribution function (LDF) are explored in this work with the purpose of a precise reconstruction of two fundamental air shower parameters: the primary energy and the shower X_{\max} .

The method presented here has been developed on (REAS3-)simulations, and applied to the LOPES measurements. Despite the high human-made noise at the LOPES site, promising results with reasonably low uncertainties are achieved.

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