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Studies for High Energy air shower identification using RF measurements with the ASTRONEU array

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The Hellenic Open University (HOU) Cosmic Ray Telescope (ASTRONEU) comprises 9 charged particle detectors and 3 RF antennas arranged in three autonomous stations operating at the University Campus of HOU in the city of Patra. In this work, we extend the analysis of very high energy showers that are detected by more than one station and in coincidence with the RF antennas of the Telescope. We present the angular distributions as well as the energy distribution of the selected showers in comparison to the Monte Carlo (MC) simulations expectations. Special attention is given to the transfer functions of the antennas which are strongly frequency and angular dependent. We find that the RF spectra (at frequencies 30-80 MHz) of the detected showers are exhibiting features of the antenna response predicted by detailed MC simulation suggesting thus, that a single antenna spectrum might give access to the Cosmic Ray arrival direction.

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