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Measurement of PeVatrons with the future Southern Wide-field Gamma-ray Observatory (SWGGO)

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The focus of my PhD thesis at LIP is the measurement of PeVatrons with the future Southern Wide-field Gamma-ray Observatory (SWGGO), which will have the ability to survey the Galactic centre. Currently, I am working on the exploration of extended air shower characteristics, looking in particular for quantities that can improve SWGGO's gamma/hadron separation capabilities, in the effort of reaching a cost-effective solution for SWGGO's detector.

The first part of my work led to the definition of the and variables, which quantify the azimuthal fluctuations of the shower footprint at the ground.

The first promising results show that these variables have a discrimination power similar to the one that can be obtained by counting the muons at the ground. Their usage will be tested with real data from LHAASO and Auger and their capability of measuring the shower mass composition will be explored.

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