

# Exploring the population of Galactic very-high-energy gamma-ray sources

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At very high energies (VHE), the emission of gamma rays is dominated by discrete sources. Due to the limited resolution and sensitivity of current-generation instruments, only a small fraction of the total Galactic population of VHE gamma-ray sources has been significantly detected. The larger part of the population can be expected to contribute as a diffuse signal alongside emission originating from propagating cosmic rays. Without quantifying the source population, it is not possible to disentangle these two components. Based on the H.E.S.S. Galactic Plane Scan, a numerical approach has been taken to develop a model of the population of Galactic VHE gamma-ray sources, which is shown to accurately account for the observational bias. We present estimates of the absolute number of sources in the Galactic Plane and their contribution to the total VHE gamma-ray emission for five different spatial source distributions. Prospects for CTA and its ability to constrain the model are discussed. Finally, first results of an extension of our modelling approach using machine learning to extract more information from the available data set are presented.

## Keywords

Galactic; very high energy; gamma ray; sources; population

## Collaboration

## other Collaboration

## Subcategory

Experimental Results

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