

# Young massive stellar clusters as cosmic-ray sources: the case of Westerlund 1

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Young massive stellar clusters are increasingly discussed as major contributors to the flux of Galactic cosmic rays. Westerlund 1, being the most massive young stellar cluster in the Milky Way, is a prime target to study in this regard. We present results from deep observations of the region around Westerlund 1 in very-high-energy gamma rays with the H.E.S.S. array of Cherenkov telescopes. We observe a large-scale ( $\sim 2^\circ$  diameter) emission region with a shell-like structure, extending much beyond the stellar cluster itself. No indications for a variation of the source morphology with energy could be found, the combined energy spectrum extends to several tens of TeV. Apart from Westerlund 1, no other potential counterparts were found that can be responsible for the bulk of the gamma-ray emission. We discuss various different explanations for the origin of the gamma-ray emission, considering both cosmic-ray acceleration at shock fronts within the cluster as well as scenarios related to the powerful combined cluster wind.

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