Contribution ID: **87** Type: **not specified**

Gamma-ray observations of the massive stellar cluster Westerlund I with HESS

Thursday, 8 September 2022 13:50 (20 minutes)

Young massive stellar clusters are extreme environments, and potentially provide the means for efficient particle acceleration. Indeed, they are increasingly considered as being responsible for a significant fraction of cosmic rays (CRs) accelerated within the Milky Way. Westerlund 1, the most massive known young stellar cluster in our Galaxy is a prime candidate for studying this hypothesis. While the very-high-energy gamma-ray source HESS J1646−458 has been detected in the vicinity of Westerlund 1 in the past, its association could not be firmly identified.

With the aim to identify the physical processes responsible for the gamma-ray emission of HESS J1646−458, we used a significantly enlarged set of 164 hours of data recorded with the High Energy Stereoscopic System (H.E.S.S.) and carried out a deep spectromorphological study of the region. We furthermore employed H I and CO observations of the region to infer the presence of gas that could serve as target material for interactions of accelerated CRs.

In this presentation, an insight into the gamma-ray data analysis and the corresponding spectromorphological analysis results is given. Different acceleration sites within the region, including Westerlund 1, and mechanisms are addressed and their potential to contribute to the observed gamma-ray emission is evaluated.

Summary

Primary author: SPECOVIUS, Andreas (FAU Erlangen-Nürnberg (ECAP))

Presenter: SPECOVIUS, Andreas (FAU Erlangen-Nürnberg (ECAP))

Session Classification: Galactic Sources