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Dark matter searches towards WLM dwarf irregular galaxy with H.E.S.S.

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In the indirect dark matter (DM) detection framework, the DM particles would produce some signals by self-annihilating and creating standard model products such as γ rays, which might be detected by ground-based telescopes.

Dwarf irregular galaxies represent promising targets for the search for DM as they are assumed to be dark matter dominated.

In 2018, the H.E.S.S. telescopes observed the irregular dwarf galaxy Wolf-Lundmark-Melotte (WLM) for 18 hours. These observations are the very first ones made by an imaging air Cherenkov telescope toward this kind of objects. We search for a DM signal looking for excess of γ rays towards WLM dwarf galaxy. We perform the first analysis of this source in stereoscopy using the data taken by the five H.E.S.S. telescopes. We present the new results on the observations of WLM interpreted in terms of velocity-weighted cross section for DM self-annihilation $\langle\sigma v\rangle$ as a function of DM particle m_χ mass for several annihilation channels.

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