

Dark Matter searches towards the 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. These dwarf irregular galaxies are rotationally supported with relatively simple and well measured kinematics which lead to small uncertainties on their dark matter distribution profiles. 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 $m\chi$ mass for eight annihilation channels: $b\bar{b}$, W^+W^- , $\tau^+\tau^-$, Z^+Z^- , e^+e^- , $\mu^+\mu^-$, $t\bar{t}$ as continuum spectra and the prompt emission $\gamma\gamma$.

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