



<b>Publication Year</b>	2016
<b>Acceptance in OA @INAF</b>	2020-06-05T08:27:09Z
<b>Title</b>	VizieR Online Data Catalog: W49B with H.E.S.S. and Fermi-LAT (HESS+, 2018)
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<b>Handle</b>	<a href="http://hdl.handle.net/20.500.12386/25925">http://hdl.handle.net/20.500.12386/25925</a>
<b>Journal</b>	VizieR Online Data Catalog



J/A+A/612/A5

W49B with H.E.S.S. and Fermi-LAT

(HESS+, 2018)

The supernova remnant W49B as seen with H.E.S.S. and Fermi-LAT.  
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 Ait Benkhali F., Akhperjanian A.G., Andersson T., Anguner E.O., Arrieta M.,  
 Aubert P., Backes M., Balzer A., Barnard M., Becherini Y., Becker Tjus J.,  
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 Fermi-LAT Collaboration, Katsuta J.  
 <Astron. Astrophys. 612, A5 (2018)>  
 =2018A&A...612A...5H (SIMBAD/NED BibCode)

**ADC\_Keywords:** Gamma rays - Supernova remnants - Molecular clouds

**Keywords:** gamma-rays: general - ISM: supernova remnants - ISM: clouds

#### Abstract:

The supernova remnant (SNR) W49B originated from a core-collapse supernova that occurred between one and four thousand years ago, and subsequently evolved into a mixed-morphology remnant, which is interacting with molecular clouds (MC). Gamma-ray observations of SNR-MC associations are a powerful tool to constrain the origin of Galactic cosmic rays, as they can probe the acceleration of hadrons through their interaction with the surrounding medium and subsequent emission of non-thermal photons. We report the detection of a gamma-ray source coincident with W49B at very high energies (VHE;  $E > 100$  GeV) with the H.E.S.S. Cherenkov telescopes together with a study of the source with five years of Fermi-LAT high-energy gamma-ray (0.06–300 GeV) data. The smoothly connected, combined source spectrum, measured from 60 MeV to multi-TeV energies, shows two significant spectral breaks at  $304 \pm 20$  MeV and  $8.4_{-2.5}^{+2.2}$  GeV; the latter is constrained by the joint fit from the two instruments. The detected spectral features are similar to those observed in several other SNR-MC associations and are found to be indicative of gamma-ray emission produced through neutral-pion decay.

#### Description:

File hessmap.fit contains the gamma-ray excess map obtained with H.E.S.S. in the direction of the supernova remnant W49B.

#### Objects:

RA	(2000)	DE	Designation(s)
19 11 7.3		+09 05 37.0	HESS J1911+090 = W49B

#### File Summary:

FileName	Recl	Records	Explanations
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```

ReadMe          80      .   This file
list.dat        135     1   Information on fits image
hessmap.fit     2880    19   FITS image

```

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**See also:**

[J/A+A/612/A1](#) : H.E.S.S. Galactic Plane Survey (HESS+, 2018)  
[J/A+A/612/A6](#) : RX J1713.7-3946 HESS spectrum (HESS+, 2018)  
[J/A+A/612/A7](#) : Vela Junior (RX J0852.0-4622) HESS image (HESS+, 2018)

**Byte-by-byte Description of file:** [list.dat](#)


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Bytes	Format	Units	Label	Explanations
1	A1	---	---	[G]
2- 10	F9.5	deg	GLON	Galactic longitude of center
11- 19	F9.5	deg	GLAT	Galactic latitude of center (J2000)
21- 23	I3	---	Nx	Number of pixels along X-axis
25- 27	I3	---	Ny	Number of pixels along Y-axis
29- 30	I2	Kibyte	size	Size of FITS file
32- 42	A11	---	FileName	Name of FITS file
44-135	A92	---	Title	Title of the FITS file

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**Acknowledgements:**

HESS collaboration, [contact.hess\(at\)hess-experiment.eu](mailto:contact.hess(at)hess-experiment.eu)

**References**

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HESS collaboration, Paper II [2018A&A...612A...2H](#)  
HESS collaboration, Paper III [2018A&A...612A...3H](#)  
HESS collaboration, Paper IV [2018A&A...612A...4H](#)  
HESS collaboration, Paper V [2018A&A...612A...5H](#), Cat. [J/A+A/612/A5](#)  
HESS collaboration, Paper VI [2018A&A...612A...6H](#), Cat. [J/A+A/612/A6](#)  
HESS collaboration, Paper VII [2018A&A...612A...7H](#), Cat. [J/A+A/612/A7](#)  
HESS collaboration, Paper VIII [2018A&A...612A...8H](#)  
HESS collaboration, Paper IX [2018A&A...612A...9H](#)  
HESS collaboration, Paper X [2018A&A...612A...10H](#)  
HESS collaboration, Paper XI [2018A&A...612A...11H](#)  
HESS collaboration, Paper XII [2018A&A...612A...12H](#)  
HESS collaboration, Paper XIII [2018A&A...612A...13H](#)  
MAGIC collaboration, Paper XIV [2018A&A...612A...14M](#)

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(End) Francois Brun [HESS], Patricia Vannier [CDS] 07-Oct-2016

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