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Authors	H. E. S. S. Collaboration, Abdalla, H., Abramowski, A., Aharonian, F., 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., Berge, D., Bernhard, S., Bernlohr, K., Blackwell, R., Bottcher, M., Boisson, C., Bolmont, J., Bordas, P., Bregeon, J., Brun, F., Brun, P., Bryan, M., Bulik, T., Capasso, M., Carr, J., Casanova, S., Cerruti, M., Chakraborty, N., Chalme-Calvet, R., Chaves, R. C. G., Chen, A., Chevalier, J., Chretien, M., Colafrancesco, S., Cologna, G., Condon, B., Conrad, J., Cui, Y., Davids, I. D., Decock, J., Degrange, B., Deil, C., Devin, J., Dewilt, P., Dirson, L., Djannati-Atai, A., Domainko, W., Donath, A., Drury, L. O'c., Dubus, G., Dutson, K., Dyks, J., Edwards, T., Egberts, K., Eger, P., Ernenwein, J. -P., Eschbach, S., Farnier, C., Fegan, S., Fernandes, M. V., Fiasson, A., Fontaine, G., Foerster, A., Funk, S., Fuessling, M., Gabici, S., Gajdus, M., Gallant, Y. A., Garrigoux, T., Giavitto, G., Giebels, B., Glicenstein, J. F., Gottschall, D., Goyal, A., Grondin, M. -H., Hadasch, D., Hahn, J., Haupt, M., Hawkes, J., Heinzlmann, G., Henri, G., Hermann, G., Hervet, O., Hinton, J. A., Hofmann, W., Hoischen, C., Holler, M., Horns, D., Ivascenko, A., Jacholkowska, A., Jamroz, M., Janiak, M., Jankowsky, D., Jankowsky, F., Jingo, M., Jogler, T., Jouvin, L., Jung-Richardt, I., Kastendieck, M. A., Katarzynski, K., Katz, U., Kerszberg, D., Khelifi, B., Kieffer, M., King, J., Klepser, S., Kloczkov, D., Kluzniak, W., Kolitzus, D., Komin, Nu., Kosack, K., Krakau, S., Kraus, M., Krayzel, F., Krueger, P. P., Laffon, H., Lamanna, G., Lau, J., Lees, J. -P., Lefaucheur, J., Lefranc, V., Lemiére, A., Lemoine-Goumard, M., Lenain, J. -P., Leser, E., Lohse, T., Lorentz, M., Liu, R., Lopez-Coto, R., Lypova, I., Marandon, V., Marcowith, A., Mariaud, C., Marx, R., Maurin, G., Maxted, N., Mayer, M., Meintjes, P. J., Meyer, M., Mitchell, A. M. W., Moderski, R., Mohamed, M., Mohrmann, L., Mora, K., Moulin, E., Murach, T., de Naurois, M., Niederwanger, F., Niemiec, J., Oakes, L., O'Brien, P., Odaka, H., Oetl, S., Ohm, S., Ostrowski, M., Oya, I., Padovani, Marco, Panter, M., Parsons, R. D., Pekeur, N. W., Pelletier, G., Perennes, C., Petrucci, P. -O., Peyaud, B., Piel, Q., Pita, S., Poon, H., Prokhorov, D., Prokoph, H., Puehlhofer, G., Punch, M., Quirrenbach, A., Raab, S., Reimer, A., Reimer, O., Renaud, M., de Los Reyes, R., Rieger, F., Romoli, C., Rosier-Lees, S., Rowell, G., Rudak, B., Rulten, C. B., Sahakian, V., Salek, D., Sanchez, D. A., Santangelo, A., Sasaki, M., Schlickeiser, R., Schuessler, F., Schulz, A., Schwanke, U., Schwemmer, S., Settimo, M., Seyffert, A. S., Shafi, N., Shilon, I., Simoni, R., Sol, H., Spanier, F., Spengler, G., Spies, F., Stawarz, L., Steenkamp, R., Stegmann, C., Stinzing, F., Stycz, K., Sushch, I., Tavernet, J. -P., Tavernier, T., Taylor, A. M., Terrier, R., Tibaldo, L., Tiziani, D., Tluczykont, M., Trichard, C., Tuffs, R., Uchiyama, Y., van der, Walt D. J., van Eldik, C., van Rensburg, C., van Soelen, B., Vasileiadis, G., Veh, J., Venter, C., Viana, A., Vincent, P., Vink, J.,



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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.
H.E.S.S. Collaboration, Abdalla H., Abramowski A., Aharonian F., 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., Berge D., Bernhard S., Bernlohr K., Blackwell R., Bottcher M., Boisson C., Bolmont J., Bordas P., Bregeon J., Brun F., Brun P., Bryan M., Bulik T., Capasso M., Carr J., Casanova S., Cerruti M., Chakraborty N., Chalme-Calvet R., Chaves R.C.G., Chen A., Chevalier J., Chretien M., Colafrancesco S., Cologna G., Condon B., Conrad J., Cui Y., Davids I.D., Decock J., Degrange B., Deil C., Devin J., deWilt P., Dirson L., Djannati-Atai A., Domainko W., Donath A., Drury L.O'C., Dubus G., Dutton K., Dyks J., Edwards T., Egberts K., Eger P., Ernenwein J.-P., Eschbach S., Farnier C., Fegan S., Fernandes M.V., Fiasson A., Fontaine G., Foerster A., Funk S., Fuessling M., Gabici S., Gajdus M., Gallant Y.A., Garrigoux T., Giavitto G., Giebels B., Glicenstein J.F., Gottschall D., Goyal A., Grondin M.-H., Hadasch D., Hahn J., Haupt M., Hawkes J., Heinzlmann G., Henri G., Hermann G., Hervet O., Hinton J.A., Hofmann W., Hoischen C., Holler M., Horns D., Ivascenko A., Jacholkowska A., Jamroz M., Janiak M., Jankowsky D., Jankowsky F., Jingo M., Jogler T., Jouvain L., Jung-Richardt I., Kastendieck M.A., Katarzynski K., Katz U., Kerszberg D., Khelifi B., Kieffer M., King J., Klepser S., Klockhov D., Kluzniak W., Kolitzus D., Komin Nu., Kosack K., Krakau S., Kraus M., Krayzel F., Krueger P.P., Laffon H., Lamanna G., Lau J., Lees J.-P., Lefaucheur J., Lefranc V., Lemiere A., Lemoine-Goumard M., Lenain J.-P., Leser E., Lohse T., Lorentz M., Liu R., Lopez-Coto R., Lypova I., Marandon V., Marcowith A., Mariaud C., Marx R., Maurin G., Maxted N., Mayer M., Meintjes P.J., Meyer M., Mitchell A.M.W., Moderski R., Mohamed M., Mohrmann L., Mora K., Moulin E., Murach T., de Naurois M., Niederwanger F., Niemiec J., Oakes L., O'Brien P., Odaka H., Oettil S., Ohm S., Ostrowski M., Oya I., Padovani M., Panter M., Parsons R.D., Pekeur N.W., Pelletier G., Perennes C., Petrucci P.-O., Peyaud B., Piel Q., Pita S., Poon H., Prokhorov D., Prokoph H., Puehlhofer G., Punch M., Quirrenbach A., Raab S., Reimer A., Reimer O., Renaud M., de los Reyes R., Rieger F., Romoli C., Rosier-Lees S., Rowell G., Rudak B., Rulten C.B., Sahakian V., Salek D., Sanchez D.A., Santangelo A., Sasaki M., Schlickeiser R., Schuessler F., Schulz A., Schwanke U., Schwemmer S., Settimo M., Seyffert A.S., Shafi N., Shilon I., Simoni R., Sol H., Spanier F., Spengler G., Spies F., Stawarz L., Steenkamp R., Stegmann C., Stinzing F., Stycz K., Sushch I., Tavernet J.-P., Tavernier T., Taylor A.M., Terrier R., Tibaldo L., Tiziani D., Tluczykont M., Trichard C., Tuffs R., Uchiyama Y., van der Walt D.J., van Eldik C., van Rensburg C., van Soelen B., Vasileiadis G., Veh J., Venter C., Viana A., Vincent P., Vink J., Voisin F., Voelk H.J., Vuillaume T., Wadiasingh Z., Wagner S.J., Wagner P., Wagner R.M., White R., Wiercholska A., Willmann P., Woernlein A., Wouters D., Yang R., Zabalza V., Zaborov D., Zacharias M., Zdziarski A.A., Zech A., Zefi F., Ziegler A., Zywnucka N., 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; $E>100\text{GeV}$) 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 ($0.06\text{--}300\text{GeV}$) data. The smoothly connected, combined source spectrum, measured from 60MeV to multi-TeV energies, shows two significant spectral breaks at $304\pm 20\text{MeV}$ and $8.4_{-2.5}^{+2.2}\text{GeV}$; 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	Lrecl	Records	Explanations
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ReadMe80. This file

[list.dat](#)1351 Information on fits image

hessmap.fit288019 FITS image

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](#)

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

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HESS collaboration, Paper II [2018A&A...612A...2H](#)

HESS collaboration, Paper III [2018A&A...612A...3H](#)

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HESS collaboration, Paper V [2018A&A...612A...5H](#), Cat. [J/A+A/612/A5](#)

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HESS collaboration, Paper XIII [2018A&A...612A...13H](#)

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(End)

Francois Brun [HESS], Patricia Vannier [CDS]

07-Oct-2016

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