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| <b>Title</b>            | VizieR Online Data Catalog: RX J1713.7-3946 HESS spectrum (HESS+, 2018)   |
| <b>Authors</b>          | 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-Ata, 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., Forster, A., Fukuyama, T., Funk, S., Fussling, 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., Jamrozy, 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., Klochkov, D., Kluzniak, W., Kolitzus, D., Komin, Nu., Kosack, K., Krakau, S., Kraus, M., Krayzel, F., Kruger, P. P., Laffon, H., Lamanna, G., Lau, J., Lees, J. -P., Lefaucheur, J., Lefranc, V., Lemièrre, 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., O Ttl, 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., Puhlhofer, 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., Schussler, 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., Stinzingy, F., Stycz, K., Sushch, I., Takahashi, T., Tavernet, J. -P., Tavernier, T., Taylor, A. M., Terrier, R., Tibaldo, L., Tiziani, D., Tluczykont, M., Trichard, C., Tu, 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/A+A/612/A6

RX J1713.7-3946 HESS spectrum

(HESS+, 2018)

H.E.S.S. observations of RX J1713.7-3946 with improved angular and spectral resolution: Evidence for gamma-ray emission extending beyond the X-ray emitting shell.

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 B., 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-Ata A., Domańko 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., Forster A., Fukuyama T., Funk S., Fussling 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., Ivaschenko A., Jacholkowska A., Jamrozny 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., Klochkov D., Kluzniak W., Kolitzus D., Komin N., Kosack K., Krakau S., Kraus M., Krayzel F., Kruger P.P., Laffon H., Lamanna G., Lau J., Lees J.-P., Lefaucheur J., Lefranc V., Lemièrre 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., Mated 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., Ottl 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., Pühlhofer 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., Schussler 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., Takahashi T., Tavernet J.-P., Tavernier T., Taylor A.M., Terrier R., Tibaldo L., Tiziani D., Tluczykont M., Trichard C., Tu 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., Volk H.J., Volpe F., Vuillaume T., Wadiasingh Z., Wagner S.J., Wagner P., Wagner R.M., White R., Wierzycholska A., Willmann P., Wornlein A., Wouters D., Yang R., Zabalza V., Zaborov D., Zacharias M., Zdziarski A.A., Zech A., Zefi F., Ziegler A., Zywnucka N.

<Astron. Astrophys. 612, A6 (2018)>

=[2018A&A...612A...6H](#) (SIMBAD/NED BibCode)

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

**Keywords:** acceleration of particles - cosmic rays - ISM: supernova remnants - gamma rays: general - astroparticle physics

#### Abstract:

Supernova remnants exhibit shock fronts (shells) that can accelerate charged particles up to very high energies. In the past decade, measurements of a handful of shell-type supernova remnants in very high-energy gamma rays have provided unique insights into the acceleration process. Among those objects, RX J1713.7-3946 (also known as G347.3-0.5) has the largest surface brightness, allowing us in the past to perform the most comprehensive study of morphology and spatially resolved spectra of any such very high-energy gamma-ray source. Here we present extensive new H.E.S.S. measurements of RX J1713.7-3946, almost doubling the observation time compared to our previous publication. Combined with new improved analysis tools, the previous sensitivity is more than doubled. The H.E.S.S. angular resolution of  $0.048^\circ$  ( $0.036^\circ$  above 2TeV) is unprecedented in gamma-ray astronomy and probes physical scales of 0.8 (0.6) parsec at the remnant's location. The new H.E.S.S. image of RX J1713.7-3946 allows us to reveal clear morphological differences between X-rays and gamma rays. In particular, for the outer edge of the brightest shell region, we find the first ever indication for particles in the process of leaving the acceleration shock region. By studying the broadband energy spectrum, we furthermore extract properties of the parent particle populations, providing new input to the discussion of the leptonic or hadronic nature of the gamma-ray emission mechanism.

#### Description:

FITS files with the very high-energy gamma-ray images, Fig.1, and the spectrum, Fig.3, as ascii text file.

#### Objects:

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RA (2000) DE Designation(s)
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17 12 27 -39 41.2 RX J1713.7-3946 = HESS J1713-397

## File Summary:

| FileName                     | Lrecl | Records | Explanations  |
|------------------------------|-------|---------|---|
| ReadMe                       | 80    | .       | This file   |
| <a href="#">spectrum.dat</a> | 14    | 30      | H.E.S.S. energy flux spectrum of RX J1713.7-3946 (Fig.3 of the paper) |
| <a href="#">list.dat</a>     | 109   | 2       | List of fits images   |
| fits/*                       | 0     | 2       | Individual fits images  |

## See also:

- [J/A+A/612/A1](#) : H.E.S.S. Galactic Plane Survey (HESS+, 2018)  
[J/A+A/612/A5](#) : W49B with H.E.S.S. and Fermi-LAT (HESS+, 2018)  
[J/A+A/612/A7](#) : Vela Junior (RX J0852.0-4622) HESS image (HESS+, 2018)

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

| Bytes | Format | Units                 | Label   | Explanations |
|-------|--------|-----------------------|---------|--------------|
| 1- 5  | F5.2   | <a href="#">TeV</a>   | E       | Energy       |
| 7- 14 | E8.3   | <a href="#">mW/m2</a> | E2dN/dE | Flux         |

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

| Bytes  | Format | Units                      | Label    | Explanations                            |
|--------|--------|----------------------------|----------|---|
| 1- 9   | F9.5   | <a href="#">deg</a>        | RAdeg    | Right Ascension of center (J2000)       |
| 10- 18 | F9.5   | <a href="#">deg</a>        | DEdeg    | Declination of center (J2000)           |
| 20- 21 | I2     | <a href="#">arcsec/pix</a> | scale    | Scale of the image                      |
| 23- 25 | I3     | ---                        | Nx       | Number of pixels along X-axis           |
| 27- 29 | I3     | ---                        | Ny       | Number of pixels along Y-axis           |
| 31- 33 | I3     | <a href="#">Kibyte</a>     | size     | Size of FITS file                       |
| 35- 49 | A15    | ---                        | FileName | Name of FITS file, in subdirectory fits |
| 51-109 | A59    | ---                        | Title    | Title of the FITS file                  |

## Acknowledgements:

David Berge, d.berge(at)uva.nl

## References


- HESS collaboration, Paper I [2018A&A...612A...1H](#), Cat. [J/A+A/612/A1](#)  
 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](#)  
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 HESS collaboration, Paper XII [2018A&A...612A...12H](#)  
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(End)

Patricia Vannier [CDS] 10-Feb-2017

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