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J/A+A/586/A71 LMC 0.2-100GeV images (Ackermann+, 2016)

Deep view of the Large Magellanic Cloud with six years of Fermi-LAT observations.

Ackermann M., Albert A., Atwood W.B., Baldini L., Ballet J., Barbiellini G., Bastieri D., Bellazzini R., Bissaldi E., Bloom E.D., Bonino R., Brandt T.J., Bregeon J., Bruehl P., Buehler R., Caliandro G.A., Cameron R.A., Caragiulo M., Caraveo P.A., Cavazzuti E., Cecchi C., Charles E., Chekhtman A., Chiang J., Chiaro G., Ciprini S., Cohen-Tanugi J., Cutini S., D'Ammando F., de Angelis A., de Palma F., Desiante R., Digel S.W., Drell P.S., Favuzzi C., Ferrara E.C., Focke W.B., Franckowiak A., Fusco P., Gargano F., Gasparrini D., Giglietto N., Giordano F., Godfrey G., Grenier I.A., Grondin M.-H., Guillemot L., Guiriec S., Harding A.K., Hill A.B., Horan D., Johannesson G., Knodlseder J., Kuss M., Larsson S., Latronico L., Li J., Li L., Longo F., Loparco F., Lubrano P., Maldera S., Martin P., Mayer M., Mazziotta M.N., Michelson P.F., Mizuno T., Monzani M.E., Morselli A., Murgia S., Nuss E., Ohsugi T., Orienti M., Orlando E., Ormes J.F., Paneque D., Pesce-Rollins M., Piron F., Pivato G., Porter T.A., Raino S., Rando R., Razzano M., Reimer A., Reimer O., Romani R.W., Sanchez-Conde M., Schulz A., Sgro E.J., Siskind C., Smith D.A., Spada F., Spandre G., Spinelli P., Suson D.J., Takahashi H., Thayer J.B., Tibaldo L., Torres D.F., Tosti G., Troja E., Vianello G., Wood M., Zimmer S.
<Astron. Astrophys. 586, A71 (2016)>
=[2016A&A...586A..71A](#) (SIMBAD/NED BibCode)

ADC_Keywords: Magellanic Clouds ; Gamma rays

Keywords: gamma rays: galaxies - Magellanic Clouds - cosmic rays

Abstract:

The nearby Large Magellanic Cloud (LMC) provides a rare opportunity of a spatially resolved view of an external star-forming galaxy in γ -rays. The LMC was detected at 0.1-100GeV as an extended source with CGRO/EGRET and using early observations with the Fermi-LAT. The emission was found to correlate with massive star-forming regions and to be particularly bright towards 30 Doradus.

Studies of the origin and transport of cosmic rays (CRs) in the Milky Way are frequently hampered by line-of-sight confusion and poor distance determination. The LMC offers a complementary way to address these questions by revealing whether and how the γ -ray emission is connected to specific objects, populations of objects, and structures in the galaxy.

We revisited the γ -ray emission from the LMC using about 73 months of Fermi-LAT P7REP data in the 0.2-100GeV range. We developed a complete spatial and spectral model of the LMC emission, for which we tested several approaches: a simple geometrical description, template-fitting, and a physically driven model for CR-induced interstellar emission.

Description:

The analysis was performed using 73.3 months of observations with the Fermi LAT (mission elapsed time 239587200 to 432694964), primarily taken in all-sky survey mode. The data set was produced with the so-called Pass 7 reprocessed (P7REP) version of the event analysis and selection criteria, which takes into account effects measured in flight that were not considered in pre-launch performance estimates, such as pile-up and accidental coincidence effects in the detector sub-systems, and updated calibration constants, to include effects such as the degradation in the calorimeter light yield.

Objects:

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RA (J2000) DE Designation(s)
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05 23 34.6 -69 45 22 LMC = NAME LMC
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File Summary:

| FileName | Lrecl | Records | Explanations |
|--------------------------|-------|---------|---------------------|
| ReadMe | 80 | . | This file |
| list.dat | 156 | 2 | List of fits images |
| fits/* | 0 | 2 | Individual images |

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

| Bytes | Format | Units | Label | Explanations |
|-------|--------|---------------------|-------|-----------------------------------|
| 1- 9 | F9.5 | deg | RAdeg | Right Ascension of center (J2000) |

| | | | | |
|--------|------|------------------------|----------|---|
| 10- 18 | F9.5 | deg | DEdeg | Declination of center (J2000) |
| 20- 22 | I3 | --- | Nx | Number of pixels along X-axis |
| 24- 26 | I3 | --- | Ny | Number of pixels along Y-axis |
| 28- 30 | I3 | Kibyte | size | Size of FITS file |
| 32- 97 | A66 | --- | FileName | Name of FITS file, in subdirectory fits |
| 99-156 | A58 | --- | Title | Title of the file |

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(End)

Patricia Vannier [CDS] 11-Jan-2016

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