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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.
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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:

RA	(2000)	DE	Designation(s)
05 23 34.6	-69 45 22	LMC = NAME	LMC

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

Acknowledgements:

Pierrick Martin, pierrick.martin(at)irap.omp.eu

(End)

Patricia Vannier [CDS] 11-Jan-2016

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