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Authors	Planck Collaboration, Ade, P. A. R., Aghanim, N., Arnaud, M., Ashdown, M., Aumont, J., Baccigalupi, C., Banday, A. J., Barreiro, R. B., Barrena, R., Bartlett, J. G., Bartolo, N., Battaner, E., Battye, R., Benabed, K., Benoit, A., Benoit-Levy, A., Bernard, J. -P., Bersanelli, M., Bielewicz, P., Bikmaev, I., Bohringer, H., Bonaldi, A., Bonavera, L., Bond, J. R., Borrill, J., Bouchet, F. R., Bucher, M., Burenin, R., BURIGANA, CARLO, Butler, R. C., Calabrese, E., Cardoso, J. -F., Carvalho, P., Catalano, A., Challinor, A., Chamballu, A., Chary, R. -R., Chiang, H. C., Chon, G., Christensen, P. R., Clements, D. L., Colombi, S., Colombo, L. P. L., Combet, C., Comis, B., Couchot, F., Coulais, A., Crill, B. P., Curto, A., CUTTAIA, FRANCESCO, Dahle, H., Danese, L., Davies, R. D., Davis, R. J., de Bernardis, P., De Rosa, A., de Zotti, G., Delabrouille, J., Desert, F. -X., Dickinson, C., Diego, J. M., Dolag, K., Dole, H., Donzelli, S., Dore, O., Douspis, M., Ducout, A., Dupac, X., Efstathiou, G., Eisenhardt, P. R. M., Elsner, F., Ensslin, T. A., Eriksen, H. K., Falgarone, E., Fergusson, J., Feroz, F., Ferragamo, A., FINELLI, FABIO, Forni, O., FRAILIS, Marco, Fraisse, A. A., FRANCESCHI, ENRICO, Frejsel, A., GALEOTTA, Samuele, Galli, S., Ganga, K., Genova-Santos, R. T., Giard, M., Giraud-Heraud, Y., Gjerlow, E., Gonzalez-Nuevo, J., Gorski, K. M., Grainge, K. J. B., Gratton, S., Gregorio, A., GRUPPUSO, ALESSANDRO, Gudmundsson, J. E., Hansen, F. K., Hanson, D., Harrison, D. L., Hempel, A., Henrot-Versille, S., Hernandez-Monteagudo, C., Herranz, D., Hildebrandt, S. R., Hivon, E., Hobson, M., Holmes, W. A., Hornstrup, A., Hovest, W., Huffenberger, K. M., Hurier, G., Jaffe, A. H., Jaffe, T. R., Jin, T., Jones, W. C., Juvela, M., Keihanen, E., Keskitalo, R., Khamitov, I., Kisner, T. S., Kneissl, R., Knoche, J., Kunz, M., Kurki-Suonio, H., Lagache, G., Lamarre, J. -M., Lasenby, A., Lattanzi, M., Lawrence, C. R., Leonardi, R., Lesgourgues, J., Levrier, F., Liguori, M., Lilje, P. B., Linden-Vornle, M., Lopez-Caniego, M., Lubin, P. M., Macias-Perez, J. F., Maggio, G., Maino, D., Mak, D. S. Y., Mandolesi, N., Mangilli, A., Martin, P. G., Martinez-Gonzalez, E., Masi, S., Matarrese, S., Mazzotta, P., McGehee, P., Mei, S., Melchiorri, A., Melin, J. -B., Mendes, L., Mennella, A., Migliaccio, M., Mitra, S., Miville-Deschenes, M. -A., Moneti, A., Montier, L., MORGANTE, GIANLUCA, Mortlock, D., Moss, A., Munshi, D., Murphy, J. A., Naselsky, P., Nastasi, A., Nati, F., Natoli, P., Netterfield, C. B., Norgaard-Nielsen, H. U., Noviello, F., Novikov, D., Novikov, I., Olamaie, M., Oxborrow, C. A., Paci, F., Pagano, L., Pajot, F., PAOLETTI, DANIELA, Pasian, F., Patanchon, G., Pearson, T. J., Perdereau, O., Perotto, L., Perrott, Y. C., Perrotta, F., Pettorino, V., Piacentini, F., Piat, M., Pierpaoli, E., Pietrobon, D., Plaszczynski, S., Pointecouteau, E., Polenta, G., Pratt, G. W., Prezeau, G., Prunet, S., Puget, J. -L., Rachen, J. P., Reach, W. T., Rebolo, R., Reinecke, M., Remazeilles, M., Renault, C., Renzi, A., Ristorcelli, I., Rocha, G., Rosset, C., ROSSETTI,

J/A+A/594/A27 Planck Sunyaev-Zeldovich sources (PSZ2) (Planck+, 2016)

Planck 2015 results.
XXVII. The second Planck catalogue of Sunyaev-Zeldovich sources.

Plankc collaboration
Ade P.A.R., Aghanim N., Arnaud M., Ashdown M., Aumont J., Baccigalupi C., Banday A.J., Barreiro R.B., Barrena R., Bartlett J.G., Bartolo N., Battaner E., Battye R., Benabed K., Benoit A., Benoit-Levy A., Bernard J.-P., Bersanelli M., Bielewicz P., Bikmaev I., Bohringer H., Bonaldi A., Bonavera L., Bond J.R., Borrill J., Bouchet F.R., Bucher M., Burenin R., Burigana C., Butler R.C., Calabrese E., Cardoso J.-F., Carvalho P., Catalano A., Challinor A., Chamballu A., Chary R.-R., Chiang H.C., Chon G., Christensen P.R., Clements D.L., Colombi S., Colombo L.P.L., Combet C., Comis B., Couchot F., Coulais A., Crill B.P., Curto A., Cuttaia F., Dahle H., Danese L., Davies R.D., Davis R.J., De Bernardis P., De Rosa A., De Zotti G., Delabrouille J., Desert F.-X., Dickinson C., Diego J.M., Dolag K., Dole H., Donzelli S., Dore O., Douspis M., Ducout A., Dupac X., Efstathiou G., Eisenhardt P.R.M., Elsner F., Ensslin T.A., Eriksen H.K., Falgarone E., Fergusson J., Feroz F., Ferragamo A., Finelli F., Forni O., Frailis M., Fraisse A.A., Franceschi E., Frejsel A., Galeotta S., Galli S., Ganga K., Genova-Santos R.T., Giard M., Giraud-Heraud Y., Gjerlow E., Gonzalez-Nuevo J., Gorski K.M., Grainge K.J.B., Gratton S., Gregorio A., Gruppuso A., Gudmundsson J.E., Hansen F.K., Hanson D., Harrison D.L., Hempel A., Henrot-Versille S., Hernandez-Monteagudo C., Herranz D., Hildebrandt S.R., Hivon E., Hobson M., Holmes W.A., Hornstrup A., Hovest W., Huffenberger K.M., Hurier G., Jaffe A.H., Jaffe T.R., Jin T., Jones W.C., Juvela M., Keihanen E., Keskitalo R., Khamitov I., Kisner T.S., Kneissl R., Knoche J., Kunz M., Kurki-Suonio H., Lagache G., Lamarre J.-M., Lasenby A., Lattanzi M., Lawrence C.R., Leonardi R., Lesgourgues J., Levrier F., Liguori M., Lilje P.B., Linden-Vornle M., Lopez-Caniego M., Lubin P.M., Macias-Perez J.F., Maggio G., Maino D., Mak D.S.Y., Mandolesi N., Mangilli A., Martin P.G., Martinez-Gonzalez E., Masi S., Matarrese S., Mazzotta P., Mcgehee P., Mei S., Melchiorri A., Melin J.-B., Mendes L., Mennella A., Migliaccio M., Mitra S., Miville-Deschenes M.-A., Moneti A., Montier L., Morgante G., Mortlock D., Moss A., Munshi D., Murphy J.A., Naselsky P., Nastasi A., Nati F., Natoli P., Netterfield C.B., Norgaard-Nielsen H.U., Noviello F., Novikov D., Novikov I., Olamaie M., Oxborrow C.A., Paci F., Pagano L., Pajot F., Paoletti D., Pasian F., Patanchon G., Pearson T.J., Perdereau O., Perotto L., Perrott Y.C., Perrotta F., Pettorino V., Piacentini F., Piat M., Pierpaoli E., Pietrobon D., Plaszczynski S., Pointecouteau E., Polenta G., Pratt G.W., Prezeau G., Prunet S., Puget J.-L., Rachen J.P., Reach W.T., Rebolo R., Reinecke M., Remazeilles M., Renault C., Renzi A., Ristorcelli I., Rocha G., Rosset C., Rossetti M., Roudier G., Rozo E., Rubino-Martin J.A., Rumsey C., Rusholme B., Rykoff E.S., Sandri M., Santos D., Saunders R.D.E., Savelainen M., Savini G., Schammel M.P., Scott D., Seiffert M.D., Shellard E.P.S., Shimwell T.W., Spencer L.D., Stanford S.A., Stern D., Stolyarov V., Stompor R., Streblyanska A., Sudiwala R., Sunyaev R., Sutton D., Suur-Uski A.-S., Sygnet J.-F., Tauber J.A., Terenzi L., Toffolatti L., Tomasi M., Tramonte D., Tristram M., Tucci M., Tuovinen J., Umana G., Valenziano L., Valiviita J., Van Tent B., Vielva P., Villa F., Wade L.A., Wandelt B.D., Wehus I.K., White S.D.M., Wright E.L., Yvon D., Zacchei A., Zonca A.

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=2016A&A...594A..27P (SIMBAD/NED BibCode)

ADC_Keywords: Millimetric/submm sources ; Surveys

Keywords: cosmology: observations - galaxies: clusters: general - catalogs

Abstract:
We present the all-sky Planck catalogue of Sunyaev-Zeldovich (SZ) sources detected from the 29 month full-mission data. The catalogue (PSZ2) is the largest SZ-selected sample of galaxy clusters yet produced and the deepest systematic all-sky survey of galaxy clusters. It contains 1653 detections, of which 1203 are confirmed clusters with identified counterparts in external data sets, and is the first SZ-selected cluster survey containing >10^3 confirmed clusters. We present a detailed analysis of the survey selection function in terms of its completeness and statistical reliability, placing a lower limit of 83% on the purity. Using simulations, we find that the estimates of the SZ strength parameter Y_{5R500} are robust to pressure-profile variation and beam systematics, but accurate conversion to Y_{500} requires the use of prior information on the cluster extent. We describe the multi-wavelength search for counterparts in ancillary data, which makes use of radio, microwave, infrared, optical, and X-ray data sets, and which places emphasis on the robustness of the counterpart match. We discuss the physical properties of the new sample and identify a population of low-redshift X-ray under-luminous clusters revealed by SZ selection. These objects appear in optical and SZ surveys with consistent properties for their mass, but are almost absent from ROSAT X-ray selected samples.

Description:
Three pipelines are used to detect SZ clusters: two independent implementations of the Matched Multi-Filter (MMF1 and MMF3), and PowellSnakes (PwS). The main catalogue is constructed as the union of the catalogues from the three detection methods. The completeness and reliability of the catalogues have been assessed through internal and external validation as described in section 4 of the paper.

File Summary:

FileName	Lrecl	Records	Explanations
ReadMe	80	.	This file
psz2.dat	360	1653	Second SZ catalogue (PSZ2) (Union catalog)
pszmmf1.dat	128	1227	MMF1 pipeline
pszmmf3.dat	128	1271	MMF3 pipeline
pszpws.dat	128	1079	PowellSnakes pipeline
fits/*	0	4	Fits version of the catalogues

See also:

VIII/88 : Planck Early Release Compact Source Catalogue (Planck, 2011)
VIII/91 : Planck Catalog of Compact Sources Release 1 (Planck, 2013)
J/A+A/594/A26 : Second Planck Catalogue of Compact Sources PCCS2 (Planck, 2016)
J/A+A/536/A8 : Planck early results. VIII. ESZ sample. (Planck+, 2011)
J/A+A/581/A14 : Updated Planck catalogue PSZ1 (Planck+, 2015)
J/A+A/594/A28 : Planck Catalogue of Galactic cold clumps (PGCC) (Planck+ 2016)

J/A+A/596/A100 : Planck high-z source candidates catalog (PHZ) (Planck+, 2016)

Byte-by-byte Description of file: psz2.dat

Bytes	Format	Units	Label	Explanations
1- 4	I4	---	Index	Index used to cross-reference with individual catalogues (INDEX)
6- 23	A18	---	Name	Source name (NAME) (1)
25- 35	F11.7	deg	GLON	Galactic longitude (GLON)
37- 47	F11.7	deg	GLAT	Galactic latitude (GLAT)
49- 59	F11.7	deg	RAdeg	Right ascension (J2000) transformed from (GLON,GLAT) (RA)
61- 71	F11.7	deg	DEdeg	Declination (J2000) transformed from (GLON,GLAT) (DEC)
73- 81	F9.6	arcmin	e_pos	Position uncertainty (95% confidence interval) (POS_ERR)
83- 90	F8.5	---	SNR	Signal-to-noise ratio of the detection (SNR)
92	I1	---	Pipeline	[1/3] Pipeline from which information is taken (reference pipeline): 1= MMF1; 2 = MMF3; 3 = PwS (PIPELINE)
94- 96	I3	---	PipeDet	Pipelines which detect this object (PIPE_DET) (2)
98	I1	---	PCCS2	[0/1] Indicates whether detection matches with any in PCCS2 catalogues (PCCS2)
100-104	I5	---	PSZ	?=-1 Index of matching detection in PSZ1, or -1 if new detection (PSZ)
106	I1	---	f_IR	Flag denoting heavy infrared contamination (IR_FLAG)
108-115	F8.6	---	q_neural	Neural network quality flag (Q_NEURAL) (3)
117-126	F10.6	10-3arcmin+2	Y5R500	Mean marginal Y5R500 as determined by reference pipeline (Y5R500)
128-136	F9.6	10-3arcmin+2	e_Y5R500	Uncertainty on Y5R500 as determined by reference pipeline (Y5R500_ERR)
138-140	I3	---	Val	External validation status (VALIDATION) (4)
142-166	A25	---	zID	External identifier of cluster associated with redshift measurement (REDSHIFT_ID) (5)
168-176	F9.6	---	z	Redshift of cluster (REDSHIFT) (5)
178-186	F9.6	10+14Msun	MSZ	?=0 SZ mass proxy (MSZ) (6)
188-195	F8.6	10+14Msun	E_MSZ	?=0 Upper bound of 68% SZ mass proxy confidence interval ($MSZ_{ERR}UP$) (6)
197-204	F8.6	10+14Msun	e_MSZ	?=0 Lower bound of 68% SZ mass proxy confidence interval ($MSZ_{ERR}LOW$) (6)
206-217	A12	---	MCXC	Identifier of X-ray counterpart in the MCXC, if one is present, JHHMM.m+DDMM (MCXC)
219-238	A20	---	RedMAPPer	Identifier of optical counterpart in the RedMAPPer catalogue, if one is present, RMJHHMMSS.s+DDMMSS.s (REDMAPPER)
240-258	A19	---	ACT	Identifier of SZ counterpart in the ACT catalogues, if one is present, ACT-CL JHHMM-DDMM or ACT-CL JHHMM.s+DDMM (ACT)
260-275	A16	---	SPT	Identifier of SZ counterpart in the SPT catalogues, if one is present, SPT-CLJHHMM+DDMM (SPT)
277-279	I3	---	f_WISE	[-10/3] Confirmation flag of WISE overdensity (WISE_FLAG) (7)
281-292	E12.6	---	AMIevi	Bayesian evidence for AMI counterpart detection (AMI_EVIDENCE) (8)
294	I1	---	COSMO	[0/1] Indicates whether detection is in the cosmology sample (COSMO)
296-360	A65	---	Comment	Comments on this detection (COMMENT)

Note (1): Format is PSZ2 Glll.ll+bb.b where (l,b) are the Galactic coordinates
truncated to 2 decimal places.
Note (2): The three least significant decimal digits are used to represent
detection or non-detection by the pipelines.
Order of the digits: hundreds = MMF1; tens = MMF3; units = PwS.
If it is detected then the corresponding digit is set to 1,
otherwise it is set to 0.
Note (3): Neural network quality flag is 1-Qbad, following the definitions in
Aghanim et al. 2014.
Note (4): Summary of the external validation, encoding the most robust external
identification as follows:
10 = ENO follow-up
11 = RTT follow-up
12 = PanSTARRs
13 = RedMAPPer non-blind
14 = SDSS high-z
15 = AMI
16 = WISE
20 = legacy identification from the PSZ1
21 = MCXC
22 = SPT
23 = ACT
24 = RedMAPPer
25 = legacy identification from PSZ1 with externally updated redshift
30 = NED
-1 = no known external counterpart
Note (5): Redshift source is the most robust external identification listed
in the VALIDATION field.
Note (6): MSZ is the hydrostatic mass assuming the best-fit Y-M scaling
relation of Arnaud 2010 as a prior.
The uncertainties are statistical and based on the Planck measurement
uncertainties only.
Not included in the uncertainties are the statistical errors on the scaling
relation, the intrinsic scatter in the relation, or systematic errors in
data selection for the scaling relation fit.
Note (7): Assigned by visual inspection as follows:
0 = no significant galaxy overdensity
1 = possible galaxy overdensity
2 = probable galaxy overdensity
3 = significant galaxy overdensity detected
-1 = possible galaxy overdensity (affected by bright star artefacts)
-2 = no significant galaxy overdensity (affected by bright star artefacts)
-3 = no assessment possible (affected by bright star artefacts)
-10 = not analysed
Note (8): Defined in the paper.

Byte-by-byte Description of file: pszmmf1.dat pszmmf3.dat pszpws.dat

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Bytes	Format	Units	Label	Explanations
1- 4	I4	---	Index	?=-1 Index from union catalogue (INDEX)
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25- 35	F11.7	deg	GLON	Galactic longitude (GLON)
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61- 71	F11.7	deg	DEdeg	Declination (J2000) transformed from (GLON, GLAT) (DEC)
73- 81	F9.6	arcmin	e_Pos	Position uncertainty (95% confidence interval) (POS_ERR)
83- 90	F8.5	---	SNR	Signal-to-noise ratio of detection (SNR)
92-100	F9.6	arcmin	b_TS	Minimum value of $theta_s$ in grid in second extension HDU (TS_MIN) (2)
102-110	F9.5	arcmin	B_TS	Maximum value of $theta_s$ in grid in second extension HDU (TS_MAX) (2)
112-119	F8.6	arcmin+2	b_Y	Minimum value of Y in grid in second extension HDU (Y_MIN) (2)
121-128	F8.6	arcmin+2	B_Y	Maximum value of Y in grid in second extension HDU (Y_MAX) (2)

Note (1): Format PSZ2 Glll.ll+bb.bb where (l, b) are the Galactic coordinates
truncated to 2 decimal places.
Note (2): Extension 2 contains a three-dimensional image with the
two-dimensional probability distribution in $theta_s$ and Y for
each detection.
The probability distributions are evaluated on a 256x256 linear grid between
the limits specified in extension 1. The limits are determined independently
for each detection. The dimension of the 3D image is 256x256xNdet, where
Ndet is the number of detections. The first dimension is $theta_s$ and the
second dimension is Y.
Extension 3 contains a three-dimensional image with the information
on the MSZ observable per cluster as a function of assumed redshift.
The image dimensions are 100x4xNdet, where Ndet is the number of detections.
The first dimension is the assumed redshift. The second dimension has size 4:
the first element is the assumed redshift value corresponding to the MSZ
values. The second element is the MSZ lower 68% confidence bound, the third
element is the MSZ estimate and the fourth element is the MSZ upper 68%
confidence bound, all in units of $10^{14} M_{\odot}$. These uncertainties are
based on the Planck measurement uncertainties only. Not included in the error
estimates are the statistical errors on the scaling relation, the intrinsic
scatter in the relation, or systematic errors in data selection for the

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  scaling relation fit.
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History:

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    Coped at https://wiki.cosmos.esa.int/planckpla2015/index.php/Catalogues
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(End)                                   Patricia Vannier [CDS]    04-Jan-2017
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*The document above follows the rules of the Standard Description for Astronomical Catalogues; from this documentation it is possible to generate **f77** program to load files into arrays or line by line*