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Authors	Shimwell, T. W., Rottgering, H. J. A., Best, P. N., Williams, W. L., Dijkema, T. J., De Gasperin, F., Hardcastle, M. J., Heald, G. H., Hoang, D. N., Horneffer, A., Intema, H., Mahony, E. K., Mandal, S., Mechev, A. P., Morabito, L., Oonk, J. B. R., Rafferty, D., Retana-Montenegro, E., Sabater, J., Tasse, C., van Weeren, R. J., Bruggen, M., BRUNETTI, GIANFRANCO, Chyzy, K. T., Conway, J. E., Haverkorn, M., Jackson, N., Jarvis, M. J., McKean, J. P., Miley, G. K., Morganti, R., White, G. J., Wise, M. W., van Bemmell, I. M., Beck, R., BRIENZA, MARISA, BONAFEDE, ANNALISA, Calistro Rivera, G., CASSANO, Rossella, Clarke, A. O., Cseh, D., Deller, A., Drabent, A., van Driel, W., Engels, D., Falcke, H., Ferrari, C., Frohlich, S., Garrett, M. A., Harwood, J. J., Heesen, V., Hoeft, M., Horellou, C., Israel, F. P., Kapinska, A. D., Kunert-Bajraszewska, M., McKay, D. J., Mohan, N. R., Orru, E., Pizzo, R. F., PRANDONI, ISABELLA, Schwarz, D. J., Shulevski, A., Sipior, M., Smith, D. J. B., Sridhar, S. S., Steinmetz, M., Stroe, A., Varenus, E., van der Werf, P. P., Zensus, J. A., Zwart, J. T. L.
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Portal Simbad VizieR Aladin X-Match Other Help

J/A+A/598/A104 LOFAR Two-metre Sky Survey (Shimwell+, 2017)

The LOFAR Two-metre Sky Survey.

I. Survey Description and Preliminary Data Release.

Shimwell T.W., Rottgering H.J.A., Best P.N., Williams W.L., Dijkema T.J., de Gasperin F., Hardcastle M.J., Heald G.H., Hoang D.N., Horneffer A., Intema H., Mahony E.K., Mandal S., Mechev A.P., Morabito L., Oonk J.B.R., Rafferty D., Retana-Montenegro E., Sabater J., Tasse C., van Weeren R.J., Bruggen M., Brunetti G., Chyzy K.T., Conway J.E., Haverkorn M., Jackson N., Jarvis M.J., McKean J.P., Miley G.K., Morganti R., White G.J., Wise M.W., van Bemmell I.M., Beck R., Brienza M., Bonafede A., Calistro Rivera G., Cassano R., Clarke A.O., Cseh D., Deller A., Drabant A., van Driel W., Engels D., Falcke H., Ferrari C., Frohlich S., Garrett M.A., Harwood J.J., Heesen V., Hoeft M., Horellou C., Israel F.P., Kapinska A.D., Kunert-Bajraszewska M., McKay D.J., Mohan N.R., Orru E., Pizzo R.F., Prandoni I., Schwarz D.J., Shulevski A., Sipior M., Smith D.J.B., Sridhar S.S., Steinmetz M., Stroe A., Varenus E., van der Werf P.P., Zensus J.A., Zwart J.T.L.
<Astron. Astrophys. 598, A104 (2017)>
=[2017A&A...598A.104S](#) (SIMBAD/NED BibCode)

ADC_Keywords: Surveys ; Radio continuum

Keywords: surveys - catalogs - radio continuum: general -
techniques: image processing

Abstract:

The LOFAR Two-metre Sky Survey (LoTSS) is a deep 120–168MHz imaging survey that will eventually cover the entire Northern sky. Each of the 3170 pointings will be observed for 8 hrs, which, at most declinations, is sufficient to produce ~5-arcsec resolution images with a sensitivity of ~0.1mJy/beam and accomplish the main scientific aims of the survey which are to explore the formation and evolution of massive black holes, galaxies, clusters of galaxies and large-scale structure. Due to the compact core and long baselines of LOFAR, the images provide excellent sensitivity to both highly extended and compact emission. For legacy value, the data are archived at high spectral and time resolution to facilitate subarcsecond imaging and spectral line studies. In this paper we provide an overview of the LoTSS. We outline the survey strategy, the observational status, the current calibration techniques, a preliminary data release, and the anticipated scientific impact. The preliminary images that we have released were created using a fully-automated but direction-independent calibration strategy and are significantly more sensitive than those produced by any existing large-area low-frequency survey. In excess of 44,000 sources are detected in the images that have a resolution of 25-arcsec, typical noise levels of less than 0.5mJy/beam, and cover an area of over 350 square degrees in the region of the HETDEX Spring Field (right ascension 10:45:00 to 15:30:00 and declination 45:00:00 to 57:00:00).

Description:

We provide a preliminary data release from the LOFAR Two-metre Sky Survey (LoTSS). This release covers 381 square degrees (right ascension 10:45:00 to 15:30:00 and declination 45:00:00 to 57:00:00) and contains 44,500 sources which were detected with signal in excess of seven times the local noise in our 25" resolution images. The noise varies across the surveyed region but is typically below 0.5mJy/beam and we estimate the catalogue to be 90% complete for sources with flux densities in excess of 3.9mJy/beam.

File Summary:

FileName	Lrecl	Records	Explanations
ReadMe	80	.	This file
lotss.dat	171	44500	Full source catalogue of LoTSS PDR 120-168MHz sources
LoTSS.fit	2880	2136	Catalog in fits

See also:

<http://lofar.strw.leidenuniv.nl> : LoTSS Home Page

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

Bytes	Format	Units	Label	Explanations
1– 3	A3	---	---	[ILT]
4– 21	A18	---	ILT	ILT name without prefix (JHHMMSS.S+DDMMSS.S) (1)
23– 31	F9.5	deg	RAdeg	Centroid right ascension (J2000)
33– 41	F9.5	arcsec	e_RAdeg	Statistical uncertainty on right ascension (1 sigma)
43– 51	F9.5	arcsec	e_RAdegtot	Total uncertainty on right ascension (1 sigma)

53- 61	F9.5	deg	DEdeg	Centroid declination (J2000)
63- 71	F9.5	arcsec	e_DEdeg	Statistical uncertainty on declination (1 sigma)
73- 81	F9.5	arcsec	e_DEdegtot	Total uncertainty on declination (1 sigma)
83- 93	F11.5	mJy/beam	FPeak	Peak 120-168MHz brightness
95-103	F9.5	mJy/beam	e_FPeak	Statistical error on peak brightness (1 sigma)
105-115	F11.5	mJy/beam	e_FPeaktot	Total error on peak brightness (1 sigma)
117-127	F11.5	mJy	FTot	Integrated 120-168MHz flux density
129-137	F9.5	mJy	e_FTot	Statistical error on integrated flux density
139-149	F11.5	mJy	e_FTottot	Total error on integrated flux density
151	A1	---	Resolved	Flag indicating whether source is resolved
153-161	F9.5	mJy/beam	Islrms	Local image background RMS noise
163	A1	---	SCode	[SCM] Source structure code (2)
165-171	A7	---	MosaicID	Name of the parent mosaic image (3)

Note (1): The full source name including prefix is 'ILTJHHMMSS.s+DDMMSS.s', with HHMMSS.s+DDMMSS.s the centroid coordinates in sexagesimal format.

Note (2): The source structure code defines the multiplicity of the source structure in terms of Gaussian components as follows:
S = refers to an isolated single-Gaussian source
C = refers to a single-Gaussian source partly overlapping with other sources
M = is a source fit with multiple Gaussians

Note (3): The parent mosaic image in which the source detection was characterised. The mosaic images are provided through the LoTSS website <http://lofar.strw.leidenuniv.nl>

Acknowledgements:
Timothy Shimwell, shimwell(at)strw.leidenuniv.nl

(End) Timothy Shimwell [Leiden Obs], Patricia Vannier [CDS] 07-Feb-2017

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](#)