

CAVITY, Calar Alto Void Integral-field Treasury survey

II. Second public data release: tables & catalogues

B. Bidaran¹, A. Jiménez¹, R. García-Benito², M. Argudo-Fernández^{1,3}, M. Alcázar-Laynez¹, S.B. De Daniloff^{4,1}, S. Duarte Puertas^{1,3,5}, D. Espada^{1,3}, E. Florido^{1,3}, Y. K. González-Koda¹, I. Pérez^{1,3}, T. Ruiz-Lara^{1,3}, L. Sánchez-Menguiano^{1,3}, G. Torres-Ríos¹, P. Vázquez-Bustos¹, S. Verley^{1,3}, A. Zurita^{1,3}, M. A. Canossa-Gosteinski⁶, A. M. Conrado², H. M. Courtois⁷, I. del Moral-Castro⁸, J. Falcón-Barroso^{9,10}, A. Ferré-Mateu^{9,10}, M. Hernández Sánchez¹¹, A. Lugo-Aranda¹², S. Subramanian^{13,14}, P. Villalba-González¹⁵, L. Galbany^{16,17}, R. M. González Delgado², R. F. Peletier⁶, S. F. Sánchez^{10,12}, R. van de Weygaert⁶, and A. Fernández¹⁸

- ¹ Dpto. de Física Teórica y del Cosmos, Facultad de Ciencias (Edificio Mecenas), Universidad de Granada, E-18071, Granada, Spain
- ² Instituto de Astrofísica de Andalucía - CSIC, Glorieta de la Astronomía s/n, E-18008 Granada, Spain
- ³ Instituto Carlos I de Física Teórica y Computacional, Universidad de Granada, E-18071, Granada, Spain
- ⁴ Institut de Radioastronomie Millimétrique (IRAM), Av. Divina Pastora 7, Núcleo Central E-18012, Granada, Spain
- ⁵ Département de Physique, de Génie Physique et d'Optique, Université Laval, and Centre de Recherche en Astrophysique du Québec (CRAQ), Québec, QC, G1V 0A6, Canada
- ⁶ Kapteyn Astronomical Institute, University of Groningen, PO Box 800, 9700 AV Groningen, The Netherlands
- ⁷ Université Claude Bernard Lyon 1, IUF, IP2I Lyon, 4 rue Enrico Fermi, 69622 Villeurbanne, France
- ⁸ Instituto de Astrofísica, Facultad de Física, Pontificia Universidad Católica de Chile, Campus San Joaquín, Av. Vicuña Mackenna 4860, Macul, Santiago, Chile, 7820436
- ⁹ Instituto de Astrofísica de Canarias, c/Vía Láctea s/n, E-38205, La Laguna, Tenerife, Spain
- ¹⁰ Departamento de Astrofísica, Universidad de La Laguna, E-38206, La Laguna, Tenerife, Spain
- ¹¹ Departament d'Astronomia i Astrofísica, Universitat de València, E-46100 Burjassot (València), Spain
- ¹² Instituto de Astronomía, Universidad Nacional Autónoma de México, A.P. 70-264, 04510 Ciudad de México, México
- ¹³ Indian Institute of Astrophysics, Koramangala II Block, Bangalore-560034, India
- ¹⁴ Leibniz-Institut für Astrophysik Potsdam (AIP), An der Sternwarte 16, D-14482 Potsdam, Germany
- ¹⁵ Department of Physics and Astronomy, University of British Columbia, Vancouver, BC V6T 1Z1, Canada
- ¹⁶ Institute of Space Sciences (ICE-CSIC), Campus UAB, Carrer de Can Magrans, s/n, E-08193 Barcelona, Spain
- ¹⁷ Institut d'Estudis Espacials de Catalunya (IEEC), E-08860 Castelldefels (Barcelona), Spain
- ¹⁸ Centro Astronómico Hispano en Andalucía, Observatorio de Calar Alto, Sierra de los Filabres, E-04550 Gérgal, Almería, Spain

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ABSTRACT

This document serves as a companion to the published CAVITY DR2 paper. It provides detailed descriptions of catalogue tables, also available on the [project website](#).

Context. Studying galaxy evolution under the unique environmental conditions of cosmic voids provides an opportunity to disentangle the role of the large-scale environment in shaping mass assembly (both baryonic and dark matter), regulating galaxy physical properties, and driving the transformation from star-forming to quiescent systems.

Aims. We present the second public data release (DR2) of the Calar Alto Void Integral-field Treasury Survey (CAVITY), an ongoing legacy programme designed to study void galaxies (VGs) across a range of nearby ($0.005 \leq z \leq 0.050$) voids with different sizes and dynamical stages, providing 200 science-grade optical integral-field spectroscopy (IFS) data cubes.

Methods. The observations were obtained with the PMAS/PPAK spectrograph on the 3.5-m Calar Alto telescope using the V500 configuration, covering the optical spectral range of 3745–7500 Å at a resolution of 6 Å (FWHM).

Results. The DR2 VG sample spans a broad range of stellar masses, morphologies, colours, and gas ionisation properties. We describe the sample selection, observing strategy, data reduction pipeline, quality-control procedures, and the public access to the CAVITY datasets and associated ancillary data on the survey's database. In addition, we present a characterisation of the large- and local-scale environments of CAVITY galaxies, showing that the 15 surveyed voids encompass a wide variety of sizes, galaxy richness, galaxy populations, and local structures, including galaxy groups.

Conclusions. This release comprises 200 IFS data cubes, publicly available together with the master catalogues at the survey's dedicated webpage: <https://cavity.caha.es/data/dr2/>.

Key words. techniques: imaging spectroscopy – techniques: spectroscopic – surveys – galaxies: evolution – galaxies: general – Cosmology: large-scale structure of Universe

1. Access to the CAVITY DR2 data

All CAVITY DR2 data cubes and catalogues are publicly available through the survey's webpage¹, which also provides project updates and information on future CAVITY and CAVITY+ data releases. Moreover, the dedicated DR2 webpage² provides access to the released data products such as catalogues and PPAK images. The database structure and data tables remain unchanged from the first data release, and are described in detail in the DR1 paper.

The CAVITY database is built using the open-source Daiquiri framework (Galkin et al. 2020), which provides functionalities such as news updates, user comments, and an SQL query interface. The CAVITY catalogues are distributed in the commonly used CSV and FITS formats and are fully compatible with the Virtual Observatory (VO) standards. The catalogues can be accessed through the SQL query interface available on the CAVITY query webpage³ as well as through the Table Access Protocol (TAP; Dowler et al. 2011). Using SQL or Astronomical Data Query Language (ADQL; the IVOA standard query language) queries, users can access the complete DR2 dataset and other CAVITY catalogues, with the possibility of applying customised selection criteria tailored to specific scientific goals. To demonstrate the capabilities of the database and facilitate its use, an example query retrieving PPAK data cubes, images, and selected columns from the master catalogue for two galaxies (with survey IDs 34100 and 34101) in the DR2 sample is provided below. Additional examples for all currently available CAVITY data releases can be found in the examples section of the query webpage.

```
SELECT m.galaxy, m.ra, m.dec, m.redshift, m.M_star, c.file, i.img_footprint, i.img_moment
FROM dr2.Master as m, dr2.PPAK_images as i, dr2.PPAK_cubes as c
WHERE m.galaxy = i.galaxy AND m.galaxy = c.galaxy AND m.galaxy IN (34100,34101)
```

2. Database tables

In this section, we review the details of all the catalogs provided through CAVITY DR2. These catalogs are accessible from the CAVITY database, as explained in Section 1, and are available in both FITS and CSV formats. Below, we briefly review the main properties of each:

- **PPAK_cubes (Tab. 1):** This table contains the FITS files of observed CAVITY galaxies provided by the PPAK data reduction pipeline.
- **PPAK_images (Tab. 2):** This table contains the footprint and radar imagery of the CAVITY galaxies. In all the images, the effective radius of the galaxy is marked in white, and the PPAK hexagonal footprint is marked in green.
- **Master (Tab. 3):** This table contains the main physical properties of CAVITY galaxies and is a summary of all the catalogues described here. The majority of parameters presented in this table are taken from publicly available catalogues, as outlined in Tab. 3. A few parameters are derived by the team members, for which we will discuss their details here. The "effr-fraction" is the effective radius fraction of the location of galaxies within voids, assuming them as spheres with similar volume as the actual void. "d25" represents the galaxy's major axis, which is three times the value of its "petroR90-r". The "petroR90-r" is the radius encompassing 90% of the Petrosian flux in the R-band. These values are taken from Alam et al. (2015). "incl" is galaxy's inclination defined as $\arccos(b/a)$ where b and a are minor and major axis, respectively. " A_v " is Galactic r band extinction along line-of-sight and is derived following the steps outlined for table AG in the following.
- **Voids (Tab. 4):** This table describes the main physical properties of CAVITY voids. All the properties are directly taken from Pan et al. (2012) public void catalogue. All x, y, z coordinates reported in this table are calculated as distances in Mpc/h, using the following equations: $x = r \cos(\text{ra}) \cos(\text{dec})$; $y = r \sin(\text{ra}) \cos(\text{dec})$; $z = r \sin(\text{dec})$. Their assumed cosmology is $\Omega_m = 0.27$.
- **AG (Tab. 5):** This table contains the Galactic extinction data for CAVITY galaxies. Optical Galactic extinctions in different SDSS filters are calculated based on the SFD Dust survey (Schlegel et al. 1998) and SDSS filters (Schlafly & Finkbeiner 2011) publicly available `gdpyc` python package⁴.
- **ALFALFA_SDSS (Tab. 6):** ALFALFA-SDSS Galaxy Catalogue for CAVITY galaxies.
- **IFU (Tab. 7):** This table contains information on IFU data availability from CALIFA⁵ and MaNGA⁶ surveys for CAVITY galaxies. Columns are set to 1 if the corresponding data is available and 0 otherwise.
- **PAN_MAGLIM (Tab. 8):** This table contains properties of CAVITY galaxies directly taken from the publicly available magnitude limited catalogue of Pan et al. (2012).
- **SDSS (Tab. 9):** This table contains photometric properties of CAVITY galaxies, directly taken from the 12th data release of the Sloan Digital Sky Survey (Alam et al. 2015).
- **Morpho (Tab. 10):** The morphological classification catalogue of CAVITY galaxies, constructed from four public catalogues and studies (Lintott et al. 2008; Willett et al. 2013; Huertas-Company et al. 2011; Domínguez Sánchez et al. 2018).
- **MPA (Tab. 11):** This table contains properties of CAVITY galaxies, directly taken from the MPA-JHU Catalogue⁷ (Brinchmann et al. 2004; Kauffmann et al. 2003; Tremonti et al. 2004).
- **LEDA (Tab. 12):** This table contains properties of CAVITY galaxies directly taken from the Hyperleda Catalogue⁸.

¹ <https://cavity.caha.es/>

² <https://cavity.caha.es/data/dr2/>

³ <https://cavity.caha.es/query/>

⁴ <https://gdpyc.readthedocs.io/en/latest/>

⁵ <https://califa.caha.es/>

⁶ <https://www.sdss4.org/surveys/manga/>

⁷ https://live-sdss4org-dr12.pantheonsite.io/spectro/galaxy_mpa_jhu/

⁸ <http://leda.univ-lyon1.fr/leda/meandata.html>

Table 1. PPAK_cubes

column	description	unit	UCD	datatype
galaxy	CAVITY ID		meta.id;meta.main;	int
name	CAVITY name		meta.id;	char
date	Observation date		time.epoch;	date
version	Pipeline version			char
file	Fits file of the galaxy		meta.ref;meta.file;meta.fits;	char

Table 2. PPAK_images

column	description	unit	UCD	datatype
galaxy	CAVITY ID		meta.id;meta.main;	int
img_footprint	PPak footprint on the SDSS image of the galaxy.		meta.ref;meta.image;	char
img_moment	Moment 0 map (from 450 to 700 nm) of the galaxy.		meta.ref;meta.image;	char
img_spectrum	Spectrum of the center of the galaxy.		meta.ref;meta.image;	char

Table 3. Master

column	description	unit	UCD	datatype
galaxy	Name of the target galaxy (CAVITY ID) ^a		meta.id; meta.main;	int
void	The hosting void number ^a		meta.id;	int
ra	Right ascension of the galaxy ^b	[degree]	pos.eq.ra	float
dec	Declination of the galaxy ^b	[degree]	pos.eq.dec	float
redshift	Redshift ^b		src.redshift;	float
effr_frac	Galaxy's distance to the center of its host void, normalised to the effective radius of the void ^a		phys.size.radius;	float
morphology	Morphology type ^c		arith.ratio;	float
d25	Major axis ^a	[arcsec]	src.morph;	float
incl	Inclination ^a	[degree]	phys.angSize.smajAxis;	float
pa	Position angle ^d	[degree]	src.orbital.inclination;	float
rabsmag	Absolute r-band magnitude ^b	[mag]	pos.posAng;	float
sb	Surface brightness ^a	[mag]	phot.mag;	float
g-r	Color g-r ^b	[mag]	phot.mag.sb;	float
Av	Galactic r band extinction along line-of-sight ^a	[mag]	phot.color; em.opt.B;	float
M_star	Log of stellar mass in solar masses ^e	[log(M _⊙)]	em.opt.R;	float
fluxHI	HI line flux density ^f	[Jy·km·s ⁻¹]	phys.absorption.gal;	float
vmaxg	Rotational velocity ^d	[km·s ⁻¹]	phys.mass;	float
log(SFR)	Log of star formation rate ^e	[log(M _⊙ ·yr ⁻¹)]	phys.flux.density;	float
SDSS_ID	The SDSS ID ^g		em.line.HI; spect.line;	float

^a: Pérez et al. (2024), ^b: Pan et al. (2012), ^c: Domínguez Sánchez et al. (2018), ^d: Makarov et al. (2014)

^e: The MPA-JHU survey, ^f: Durbala et al. (2020), ^g: Public Sloan Digital Sky Survey Catalogue-DR8

Table 4. Voids

column	description	unit	UCD	datatype
void	CAVITY Void ID		meta.id;meta.main;	int
ra	Right ascension of the center of the maximal sphere	[degree]	pos.eq.ra;	float
dec	Declination of the center of the maximal sphere	[degree]	pos.eq.dec;	float
x	Equatorial x coordinate of the center of the maximal sphere	[Mpc/h]	pos.cartesian.x;	float
y	Equatorial y coordinate of the center of the maximal sphere	[Mpc/h]	pos.cartesian.y;	float
z	Equatorial z coordinate of the center of the maximal sphere	[Mpc/h]	pos.cartesian.z;	float
r	Radius of the maximal sphere	[Mpc/h]	pos.spherical.r;	float
volx	Equatorial x coordinate of the center of the void region	[Mpc/h]	pos.cartesian.x;	float
voly	Equatorial y coordinate of the center of the void region	[Mpc/h]	pos.cartesian.y;	float
volz	Equatorial z coordinate of the center of the void region	[Mpc/h]	pos.cartesian.z;	float
effr	Radius of the sphere which has the same volume as the void region	[Mpc/h]	pos.spherical.r;	float
numgals	Number of volume limited galaxies that reside in the entire void region		meta.number;	int

Table 5. AG

column	description	unit	UCD	datatype
galaxy	CAVITY ID		meta.id;meta.main;	int
LEDA	Galactic extinction in B-band (ag from Hyperleda catalogue)	[mag]	phys.absorption.gal;em.opt.B;	float
SDSS_u	Galactic extinction using SDSS U-Band filter	[mag]	phys.absorption.gal;em.opt.U;	float
SDSS_g	Galactic extinction using SDSS G-Band filter	[mag]	phys.absorption.gal;em.opt.B;	float
SDSS_r	Galactic extinction using SDSS R-Band filter	[mag]	phys.absorption.gal;em.opt.R;	float
SDSS_i	Galactic extinction using SDSS I-Band filter	[mag]	phys.absorption.gal;em.opt.I;	float
SDSS_z	Galactic extinction using SDSS Z-Band filter	[mag]	phys.absorption.gal;em.opt.I;	float

Table 6. ALFALFA_SDSS

column	description	unit	UCD	datatype
galaxy	CAVITY ID		meta.id;meta.main;	int
AGC	Entry number in the AGC catalogue		meta.id.cross;	int
Vhelio	Heliocentric velocity of the HI profile mid-point	[km·s ⁻¹]	spect.dopplerVeloc; em.line.HI;	int
W50	Width at 50% level	[km·s ⁻¹]		int
W20	Width at 20% level	[km·s ⁻¹]		int
HIflux	HI line flux density	[Jy·km·s ⁻¹]	phot.flux.density; em.line.HI; spect.line;	float
sigflux	Uncertainty in HIflux	[Jy·km·s ⁻¹]	stat.error;phot.flux.density;	float
Dist	Distance used in MHI, Mstar, SFR	[Mpc]		float
sigDist	Uncertainty of Dist	[Mpc]		float
logMH	HI mass, where distance is the one adopted in	[log(M _⊙)]	phys.mass;	float
logMH_err	Uncertainty in logMH		stat.error;phys.mass;	float
Hicode	HI source code. Good S/N or tentative detection (1 or 2, respectively)			int
logMstarTaylor	Stellar mass from SDSS optical photometry using the Taylor method	[log(M _⊙)]	phys.mass;	float
logMstarTaylor_err	Uncertainty in logMstarTaylor		stat.error;phys.mass;	float
logMstarMcGaugh	Stellar mass from infrared unWISE photometry using the McGaugh method	[log(M _⊙)]	phys.mass;	float
logMstarMcGaugh_err	Uncertainty in logMstarMcGaugh		stat.error;phys.mass;	float
logMstarGSWLC	Stellar mass from GSWLC-2	[log(M _⊙)]	phys.mass;	float
logMstarGSWLC_err	Uncertainty in logMstarGSWLC		stat.error;phys.mass;	float
logSFR22	Star Formation Rate (SFR) from unWISE infrared photometry using the flux at the frequency of 22 μm	[log(M _⊙ ·yr ⁻¹)]	phys.SFR;	float
logSFR22_err	Uncertainty in SFR22		stat.error;phys.SFR;	float
logSFRNUVIR	Corrected near-ultraviolet SFR from GALEX NUV photometry SFRNUVcor for galaxies with NUV fluxes available in NASA-Sloan Atlas	[log(M _⊙ ·yr ⁻¹)]	phys.SFR;	float
logSFRNUVIR_err	Uncertainty in logSFRNUVIR		stat.error;phys.SFR;	float
logSFRGSWLC	SFR from GSWLC-2	[log(M _⊙ ·yr ⁻¹)]	phys.SFR;	float
logSFRGSWLC_err	Uncertainty in logSFRGSWLC		stat.error;phys.SFR;	float

Table 7. IFU

column	description	unit	UCD	datatype
galaxy	CAVITY ID [3]		meta.id;meta.main;	int
CALIFA	Flag for CALIFA galaxies in CAVITY		meta.code;	int
MaNGA	Flag for MaNGA galaxies in CAVITY		meta.code;	int

Table 8. PAN_MAGLIM

column	description	unit	UCD	datatype
galaxy	CAVITY ID		meta.id;meta.main;	int
ra	Right Ascension of the galaxy	[degree]	pos.eq.ra;	float
dec	Declination of the galaxy	[degree]	pos.eq.dec;	float
redshift	Redshift of the void galaxy		src.redshift;	float
dist	Comoving distance to the void galaxy	[Mpc/h]	pos.distance;	float
rabsmag	r-band absolute magnitude of the void galaxy	[mag]	phys.magAbs;em.opt.R;	float
g-r	g-r band color of the void galaxy	[mag]	phot.color;em.opt.B;em.opt.R;	float
x	Equatorial x coordinate of the void galaxy	[Mpc/h]	pos.cartesian.x;	float
y	Equatorial y coordinate of the void galaxy	[Mpc/h]	pos.cartesian.y;	float
z	Equatorial z coordinate of the void galaxy	[Mpc/h]	pos.cartesian.z;	float
plate	SDSS plate number		meta.number;instr.plate;	int
fiber	SDSS fiber number		meta.number;	int
mjd	Modified Julian date of the observation	[day]	time.epoch;obs;	int

Table 9. SDSS

column	description	unit	UCD	datatype
galaxy	CAVITY ID		meta.id;meta.main;	int
objID	Unique SDSS identifier composed from [skyVersion, rerun, run, camcol, field, obj]		meta.id;meta.corr;	char
petroR50_r	Radius containing 50% of Petrosian flux in the R-band	[arcsec]	phys.size.radius;em.opt.R;	float
petroR50Err_r	Error in petroR50_r	[arcsec]	stat.error;	float
petroR90_r	Radius containing 90% of Petrosian flux in the R-band	[arcsec]	phys.size.radius;em.opt.R;	float
petroR90Err_r	Error in petroR90_r	[arcsec]	stat.error;	float
expAB_r	Exponential fit b/a in the R-band		phys.size.radius;em.opt.R;	float
expABErr_r	Error in expAB_r		phys.size.axisRatio;em.opt.R;	float
modelMag_u	Model magnitude in u filter	[mag]	stat.error;	float
modelMag_g	Model magnitude in g filter	[mag]	phys.size.axisRatio;em.opt.R;	float
modelMag_r	Model magnitude in r filter	[mag]	phot.mag;em.opt.U;	float
modelMag_i	Model magnitude in i filter	[mag]	phot.mag;em.opt.B;	float
modelMag_z	Model magnitude in z filter	[mag]	phot.mag;em.opt.R;	float
modelMagErr_u	Error in modelMag_u	[mag]	phot.mag;em.opt.I;	float
modelMagErr_g	Error in modelMag_g	[mag]	stat.error;	float
modelMagErr_r	Error in modelMag_r	[mag]	phot.mag;em.opt.U;	float
modelMagErr_i	Error in modelMag_i	[mag]	stat.error;	float
modelMagErr_z	Error in modelMag_z	[mag]	phot.mag;em.opt.B;	float
			stat.error;	float
			phot.mag;em.opt.R;	float
			stat.error;	float
			phot.mag;em.opt.I;	float
			stat.error;	float
			phot.mag;em.opt.I;	float

Table 10. Morpho

column	description	unit	UCD	datatype
galaxy	CAVITY ID		meta.id;meta.main;	int
GZ1Ell	GZ1 catalogue of ELLIPTICAL classified galaxy. Ellipticals are marked as 1, else as 0		meta.code;src.morph.type;	float
GZ1S	GZ1 catalogue of SPIRAL classified galaxy. Spirals are marked as 1, else as 0		meta.code;src.morph.type;	float
GZ1U	GZ1 catalogue of UNCERTAIN classified galaxy. Galaxies with high uncertainty in classification are marked as 1, else as 0		meta.code;src.morph.type;	float
GZ2class	The most common morphology for galaxies among different classifications		meta.code.class;src.morph.type;	char
GZ2formula	GZ2 morphology classification		src.morph.type;	float
pdominant	Weighted fraction of GZ2 votes for “dominant bulge”. Galaxies with dominant bulge have higher values		stat.value;	float
pnobulge	Weighted fraction of GZ2 votes for “no bulge”. Galaxies with no bulge have higher values		stat.value;	float
pobvious	Weighted fraction of GZ2 votes for “obvious bulge”. Galaxies with obvious bulge have higher values		stat.value;	float
probaEarly	Probability of a galaxy being a early-type galaxy ($\text{'probaEarly'} = \text{'probaE'} + \text{'probaS0'}$)		stat.probability;	float
probaEll	Probability of a galaxy being elliptical		stat.probability;	float
probaLate	Probability of a galaxy being a late-type galaxy ($\text{'probaLate'} = \text{'probaSab'} + \text{'probaScd'}$)		stat.probability;	float
probaS0	Probability of a galaxy being lenticular		stat.probability;	float
probaSab	Probability of a galaxy being spiral Sa or Sb type		stat.probability;	float
probaScd	Probability of a galaxy being spiral Sc or Sd type		stat.probability;	float
TType_DS	T-type, early-type galaxies are marked with values ≤ 0 and late-type-galaxies with values > 0		meta.code.class;src.morph.type;	float

Table 11. MPA

column	description	unit	UCD	datatype
galaxy	CAVITY ID		meta.id;meta.main;	int
bestObjID	Unique ID in SDSS database		meta.id;meta.corr;	char
specObjID	Spectral ID in SDSS database		meta.id;meta.corr;	char
sn_median	Median S/N per pixel of the whole spectrum [from galSpecInfo]		stat.snr;stat.median;	float
oii_3726_flux	[OII]3726 Flux from Gaussian fit to continuum subtracted data.	$[10^{-17} \text{ erg cm}^{-2} \text{ s}^{-1}]$	phot.flux;	float
oii_3726_flux_err	Uncertainty in oii_3726_flux	$[10^{-17} \text{ erg cm}^{-2} \text{ s}^{-1}]$	stat.error;phot.flux;	float
oii_3729_flux	[OII]3729 Flux from Gaussian fit to continuum subtracted data.	$[10^{-17} \text{ erg cm}^{-2} \text{ s}^{-1}]$	phot.flux;	float
oii_3729_flux_err	Uncertainty in oii_3729_flux	$[10^{-17} \text{ erg cm}^{-2} \text{ s}^{-1}]$	stat.error;phot.flux;	float
h_beta_flux	H β Flux from Gaussian fit to continuum subtracted data.	$[10^{-17} \text{ erg cm}^{-2} \text{ s}^{-1}]$	phot.flux;	float
h_beta_flux_err	Uncertainty in the h_beta_flux	$[10^{-17} \text{ erg cm}^{-2} \text{ s}^{-1}]$	stat.error;phot.flux;	float
oiii_5007_flux	[OIII]5007 Flux from Gaussian fit to continuum subtracted data.	$[10^{-17} \text{ erg cm}^{-2} \text{ s}^{-1}]$	phot.flux;	float
oiii_5007_flux_err	Uncertainty in oiii_5007_flux	$[10^{-17} \text{ erg cm}^{-2} \text{ s}^{-1}]$	stat.error;phot.flux;	float
h_alpha_cont	Continuum at line center from 200 pixel median smoothing of the emission-line subtracted continuum	$[10^{-17} \text{ erg cm}^{-2} \text{ s}^{-1} \text{ \AA}^{-1}]$	phot.flux;spect.continuum;	float
h_alpha_cont_err	Uncertainty in h_alpha_cont	$[10^{-17} \text{ erg cm}^{-2} \text{ s}^{-1} \text{ \AA}^{-1}]$	stat.error;phot.flux;	float
h_alpha_reqw	The equivalent width of the continuum-subtracted emission line computed from straight integration over the bandpasses listed in [galSpecLine] (emission is negative). In this case the continuum comes from a running 200 pixel median and does not properly account for stellar absorption. In general the EQW measurements provide a better measure of the true equivalent width. The purpose of this measurement is to help characterize the stellar absorption affecting the line. (EW_stellar = REQW - EQW)	\AA	spect.line.eqWidth;spect.continuum;	float
h_alpha_reqw_err	Uncertainty in h_alpha_reqw	\AA	stat.error;spect.line.eqWidth;	float
h_alpha_eqw	The equivalent width of the CB08 continuum-subtracted emission line computed from straight integration over the bandpasses listed in [galSpecLine] (emission is negative). This properly takes into account stellar absorption. Note that it will not be correct in the case of blended lines (i.e., NII & H α)	\AA	spect.line.eqWidth;spect.continuum;	float
h_alpha_eqw_err	Uncertainty in h_alpha_eqw	\AA	stat.error;spect.line.eqWidth;	float
h_alpha_flux	H α Flux from Gaussian fit to continuum subtracted data.	$[10^{-17} \text{ erg cm}^{-2} \text{ s}^{-1}]$	phot.flux;	float
h_alpha_flux_err	Uncertainty in h_alpha_flux	$[10^{-17} \text{ erg cm}^{-2} \text{ s}^{-1}]$	stat.error;phot.flux;	float
nii_6584_flux	[NII]6584 Flux from Gaussian fit to continuum subtracted data.	$[10^{-17} \text{ erg cm}^{-2} \text{ s}^{-1}]$	phot.flux;	float
nii_6584_flux_err	Uncertainty in nii_6584_flux	$[10^{-17} \text{ erg cm}^{-2} \text{ s}^{-1}]$	stat.error;phot.flux;	float
sii_6717_flux	[SII]6717 Flux from Gaussian fit to continuum subtracted data.	$[10^{-17} \text{ erg cm}^{-2} \text{ s}^{-1}]$	phot.flux;	float
sii_6717_flux_err	Uncertainty in sii_6717_flux	$[10^{-17} \text{ erg cm}^{-2} \text{ s}^{-1}]$	stat.error;phot.flux;	float
sii_6731_flux	[SII]6731 Flux from Gaussian fit to continuum subtracted data.	$[10^{-17} \text{ erg cm}^{-2} \text{ s}^{-1}]$	phot.flux;	float
sii_6731_flux_err	Uncertainty in sii_6731_flux	$[10^{-17} \text{ erg cm}^{-2} \text{ s}^{-1}]$	stat.error;phot.flux;	float
oh_p16	The 16th percentile of the Oxygen abundance derived using Charlot & Longhetti models. The values are reported as $12 + \text{Log O/H}$. See Tremonti et al (2004) and Brinchmann et al (2004) for details. [from galSpecExtra]	$[10^{-17} \text{ erg cm}^{-2} \text{ s}^{-1}]$	stat.error;phot.flux;	float
			phys.abund;stat.median;	float

Table 11 MPA (Continued)

column	description	unit	UCD	datatype
oh_p50	The median estimate of the Oxygen abundance derived using Charlot & Longhetti models. The values are reported as $12 + \text{Log O/H}$. See Tremonti et al (2004) and Brinchmann et al (2004) for details. [from galSpecExtra]		phys.abund;stat.median;	float
oh_p84	The 84th percentile of the Oxygen abundance derived using Charlot & Longhetti models. The values are reported as $12 + \text{Log O/H}$. See Tremonti et al (2004) and Brinchmann et al (2004) for details. [from galSpecExtra]		phys.abund;stat.median;	float
lgm_tot_p16	The 16th percentile of the Log total stellar mass PDF using model photometry. [from galSpecExtra]	[log($M_{\odot}$)]	phys.mass;stat.median;	float
lgm_tot_p50	The median estimate of the Log total stellar mass PDF using model photometry. [from galSpecExtra]	[log($M_{\odot}$)]	phys.mass;stat.median;	float
lgm_tot_p84	The 84th percentile of the Log total stellar mass PDF using model photometry. [from galSpecExtra]	[log($M_{\odot}$)]	phys.mass;stat.median;	float
sfr_tot_p16	The 16th percentile of the Log total SFR PDF. This is derived by combining emission line measurements from within the fibre where possible and aperture corrections are done by fitting models ala Gallazzi et al (2005), Salim et al (2007) to the photometry outside the fibre. For those objects where the emission lines within the fibre do not provide an estimate of the SFR, model fits were made to the integrated photometry. [from galSpecExtra]	[log($M_{\odot} \cdot \text{yr}^{-1}$)]	phys.SFR;stat.median;	float
sfr_tot_p50	The median estimate of the Log total SFR PDF. This is derived by combining emission line measurements from within the fibre where possible and aperture corrections are done by fitting models ala Gallazzi et al (2005), Salim et al (2007) to the photometry outside the fibre. For those objects where the emission lines within the fibre do not provide an estimate of the SFR, model fits were made to the integrated photometry. [from galSpecExtra]	[log($M_{\odot} \cdot \text{yr}^{-1}$)]	phys.SFR;stat.median;	float
sfr_tot_p84	The 84th percentile of the Log total SFR PDF. This is derived by combining emission line measurements from within the fibre where possible and aperture corrections are done by fitting models ala Gallazzi et al (2005), Salim et al (2007) to the photometry outside the fibre. For those objects where the emission lines within the fibre do not provide an estimate of the SFR, model fits were made to the integrated photometry. [from galSpecExtra]	[log($M_{\odot} \cdot \text{yr}^{-1}$)]	phys.SFR;stat.median;	float
specsfr_tot_p16	The 16th percentile of the Log total SPECSFR PDF. This is derived by combining emission line measurements from within the fibre where possible and aperture corrections are done by fitting models ala Gallazzi et al (2005), Salim et al (2007) to the photometry outside the fibre. For those objects where the emission lines within the fibre do not provide an estimate of the SFR, model fits were made to the integrated photometry. [from galSpecExtra]	[log(yr^{-1})]	phys.SFR;stat.median;	float

Table 11 MPA (Continued)

column	description	unit	UCD	datatype
specsfir_tot_p50	The median estimate of the Log total SPECsFR PDF. This is derived by combining emission line measurements from within the fibre where possible and aperture corrections are done by fitting models ala Gal-lazzi et al (2005), Salim et al (2007) to the photometry outside the fibre. For those objects where the emission lines within the fibre do not provide an estimate of the SFR, model fits were made to the integrated photometry. [from galSpecExtra]	[log(yr ⁻¹)]	phys.SFR;stat.median;	float
specsfir_tot_p84	The 84th percentile of the Log total SPECsFR PDF. This is derived by combining emission line measurements from within the fibre where possible and aperture corrections are done by fitting models ala Gal-lazzi et al (2005), Salim et al (2007) to the photometry outside the fibre. For those objects where the emission lines within the fibre do not provide an estimate of the SFR, model fits were made to the integrated photometry. [from galSpecExtra]	[log(yr ⁻¹)]	phys.SFR;stat.median;	float
d4000_n	4000AA break, Balogh et al (1999) definition. [from galSpecIndx]		phot.flux.density;arithm.ratio;	float
d4000_n_err	Uncertainty in d4000_n		stat.error;phot.flux.density;arithm.ratio;	float

Table 12. LEDA

column	description	unit	UCD	datatype
galaxy	CAVITY ID		meta.id;meta.main;	int
pgc	LEDA internal number		meta.id.cross;	int
name	LEDA search string		meta.id;	char
objname	Principal designation		meta.id;	char
d25	Major axis	[arcsec]	phys.angSize.smajAxis;	float
objtype	Type of object (G=galaxy; S=Star ...)		meta.code;	char
al1950	RA 1950 (hours decimal value)		pos.eq.ra;	float
de1950	DEC 1950 (hours decimal value)		pos.eq.dec;	float
al2000	RA 2000 (hours decimal value)		pos.eq.ra;	float
de2000	DEC 2000 (hours decimal value)		pos.eq.dec;	float
l2	Galactic longitude	[degree]	pos.galactic.lon;	float
b2	Galactic latitude	[degree]	pos.galactic.lat;	float
sgl	Supergalactic longitude	[degree]	pos.supergalactic.lon;	float
sgb	Supergalactic latitude	[degree]	pos.supergalactic.lat;	float
type	Morphological type		meta.code;src.morph.type;	char
bar	Bar (B or blank)		meta.code;src.morph.param;	char
ring	Ring (R or blank)		meta.code;src.morph.param;	char
multiple	Multiple (M or blank)		meta.code;src.morph.param;	char
compactness	Compactness (C=Compact or D=Diffuse or blank)		meta.code;src.morph.param;	char
t	Morphological type code		src.morph.type;	float
e_t	Actual error on t		stat.error;src.morph.type;	float
logd25	log10 of apparent diameter (d25 in 0.1")	[log(arcsec)]	phys.size.diameter;	float
e_logd25	Actual error on logd25	[log(arcsec)]	stat.error;phys.size.diameter;	float
logr25	log10 of axis ratio (major axis/minor axis)		phys.size.axisRatio;	float

Table 12 LEDA (Continued)

column	description	unit	UCD	datatype
e_logr25	Actual error on logr25		stat.error;phys.size.axisRatio;	float
pa	Major axis position angle (North Eastwards)	[degrees]	pos.posAng;	float
brief	Mean effective surface brightness	[mag·arcsec ⁻²]	phot.mag.sb;stat.mean;	float
e_brief	Actual error on brief	[mag·arcsec ⁻²]	stat.error;phot.mag.sb;stat.mean;	float
bt	Total B-band magnitude	[mag]	phot.mag;em.opt.B;	float
e_bt	Actual error on bt	[mag]	stat.error;phot.mag;em.opt.B;	float
it	Total I-band magnitude	[mag]	phot.mag;em.opt.I;	float
e_it	Actual error on it	[mag]	stat.error;phot.mag;em.opt.I;	float
ut	Total U-band magnitude	[mag]	phot.mag;em.opt.U;	float
vmaxg	Apparent maximum rotation velocity of gas	[km·s ⁻¹]	phys.veloc.rotat;stat.max;	float
e_vmaxg	Actual error on vmaxg	[km·s ⁻¹]	stat.error;phys.veloc.rotat;	float
m21	21-cm line flux in magnitude	[mag]	phys.flux;em.line.HI;	float
e_m21	Actual error on m21	[mag]	stat.error;phot.flux;em.line.HI;	float
mfr	Far infrared magnitude	[mag]	phot.mag;	float
vrad	Heliocentric radial velocity from radio measurements	[km·s ⁻¹]	spect.dopplerVeloc.radio;pos.heliocentric;	float
e_vrad	Actual error on vrad	[km·s ⁻¹]	stat.error;spect.dopplerVeloc.radio;	float
vopt	Heliocentric radial velocity from optical measurements	[km·s ⁻¹]	spect.dopplerVeloc.opt;pos.heliocentric;	float
e_vopt	Actual error on vopt	[km·s ⁻¹]	stat.error;spect.dopplerVeloc.opt;	float
ai	Internal extinction in B magnitude	[mag]	phys.absorption;em.opt.B;	float
incl	Inclination	[degree]	src.orbital.inclination;	float
a21	21-cm self absorption	[mag]	phys.absorption;em.line.HI;	float
logdc	log10 of apparent corrected diameter (dc in 0.1')	[log(arcmin)]	phys.size.diameter;	float
btc	Total apparent corrected B-magnitude	[mag]	phot.mag;em.opt.B;	float
br25	Mean surface brightness within isophote 25	[mag·arcsec ⁻²]	phot.mag.sb;stat.mean;	float
vrot	Maximum velocity rotation corrected for inclination	[km·s ⁻¹]	phys.veloc.rotat;stat.max;	float
e_vrot	Actual error on vrot	[km·s ⁻¹]	stat.error;phys.veloc.rotat;	float
m21c	Corrected 21-cm line flux in magnitude	[mag]	phys.flux;phot.mag;em.line.HI;	float
hic	21-cm color index = m21c – btc	[mag]	phot.color;em.line.HI;em.opt.B;	float
vlg	Radial velocity (cz) with respect to the Local Group	[km·s ⁻¹]	spect.dopplerVeloc;	float
vgsr	Radial velocity (cz) with respect to the GSR	[km·s ⁻¹]	spect.dopplerVeloc;	float
vvir	Radial velocity (cz) corrected for Virgo-centric infall	[km·s ⁻¹]	spect.dopplerVeloc;	float
v3k	Radial velocity (cz) with respect to the CMB radiation	[km·s ⁻¹]	spect.dopplerVeloc;	float
modz	Redshift distance modulus	[mag]	phot.mag.distMod;	float
mod0	True distance modulus (from parameters)	[mag]	phot.mag.distMod;	float
mabs	Absolute B-magnitude	[mag]	phys.magAbs;em.opt.B;	float
f_astrom	Precision flag on celestial position			char
e_mod0	Actual error on mod0	[mag]	stat.error;phot.mag.distMod;	float
e_modz	Actual error on modz	[mag]	stat.error;phot.mag.distMod;	float
e_mabs	Actual error on mabs	[mag]	stat.error;phys.magAbs;	float
modbest	True distance modulus, combining mod0 and modz	[mag]	phot.mag.distMod;	float
e_modbest	Actual error on modbest	[mag]	stat.error;phot.mag.distMod;	float
kt	Total K-band magnitude	[mag]	phot.mag;em.IR.K;	float
e_kt	Actual error on kt	[mag]	stat.error;phot.mag;em.IR.K;	float
e_ut	Actual error on ut	[mag]	stat.error;phot.mag;em.opt.U;	float

Table 12 LEDA (Continued)

column	description	unit	UCD	datatype
hl_names(pgc)	List of all names			char
celposb(pgc)	B1950 position (character string)		meta.id; pos;	char
celposj(pgc)	J2000 position (character string)		pos;	char

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