SVA1 redMaPPer and redMaGiC Catalogs

Overview

Table of Contents

Details on the production of the DES SVA1 redMaPPer galaxy cluster and redMaGiC red galaxy catalogs are described in Rykoff et al. (2016) and Rozo et al. (2015). Users should consult these papers for any and all details about the catalogs and tests that have been performed. Further questions should be addressed to Eli Rykoff or Eduardo Rozo, who are the corresponding authors of these papers, and have email addresses therein. On this page, we merely describe the structure of the files being distributed, including brief descriptions of each of the columns included in the files.

As described in Rykoff et al. (2016), there are two redMaPPer cluster catalogs. The first is the fiducial catalog with a more conservative footprint and star/galaxy separation. The second is the "expanded" catalog, with inferior star/galaxy separation, a larger footprint, and less conservative masking.

As described in Rozo et al. (2015) (see Table 3) there are two redMaGiC red galaxy catalogs, with two different luminosity/density cuts. These are described as the "Bright" and "Faint" redMaGiC samples, although we note that the brightest galaxies in the "faint" sample substantially overlap the "bright" sample; that is, these are two alternative catalogs and should not be combined.

Download

- redmapper_sva1_public_v6.3_catalog.fits.gz
- redmapper_sva1_public_v6.3_members.fits.gz
- redmapper_sva1_public_v6.3_randoms.fits.gz
- redmapper_sva1_public_v6.3_zmask.fits.gz
- redmapper_sva1_public_v6.3_area.fits.gz
- redmapper_sva1-expanded_public_v6.3_catalog.fits.gz
- redmapper_sva1-expanded_public_v6.3_members.fits.gz
- redmapper_sva1-expanded_public_v6.3_randoms.fits.gz
- redmapper_sva1-expanded_public_v6.3_zmask.fits.gz
- redmapper_sva1-expanded_public_v6.3_area.fits.gz
- redmagic_sva1_public_v6.3_faint.fits.gz
- redmagic_sva1_public_v6.3_bright.fits.gz

redMaPPer Catalog Formats

Cluster Catalog Format

See Rykoff et al. (2016), Table 8.

Column Name	Data Type	Description
ID	INT(4)	redMaPPer Cluster Identification Number
NAME	CHAR(20)	redMaPPer Cluster Name
RA	FLOAT(8)	Right ascension in decimal degrees (J2000)
DEC	FLOAT(8)	Declination in decimal degrees (J2000)
Z_LAMBDA	FLOAT(4)	Cluster photo-z

Z_LAMBDA_ERR	FLOAT(4)	Gaussian error estimate for Z_LAMBDA
LAMBDA	FLOAT(4)	Richness estimate
LAMBDA_ERR	FLOAT(4)	Gaussian error estimate for LAMBDA
S	FLOAT(4)	Richness scale factor (see Eqn. 2 in Rykoff et al. 2016)
Z_SPEC	FLOAT(4)	Spectroscopic redshift for most likely center (-1.0 if not available)
COADD_OBJECTS_ID	INT(8)	Unique object identifier (can be used to match against other SVA1 catalogs)
MAG_AUTO_G	FLOAT(4)	g MAG_AUTO magnitude for most likely central galaxy (SLR corrected)
MAGERR_AUTO_G	FLOAT(4)	error on g MAG_AUTO magnitude
MAG_AUTO_R	FLOAT(4)	r MAG_AUTO magnitude for most likely central galaxy (SLR corrected)
MAGERR_AUTO_R	FLOAT(4)	error on r MAG_AUTO magnitude
MAG_AUTO_I	FLOAT(4)	i MAG_AUTO magnitude for most likely central galaxy (SLR corrected)
MAGERR_AUTO_I	FLOAT(4)	error on i MAG_AUTO magnitude
MAG_AUTO_Z	FLOAT(4)	z MAG_AUTO magnitude for most likely central galaxy (SLR corrected)
MAGERR_AUTO_Z	FLOAT(4)	error on z MAG_AUTO magnitude
ZLUM	FLOAT(4)	Total membershift-weighted z-band luminosity (units of L_*)
P_CEN[5]	5 x FLOAT(4)	Centering probability P_cen for 5 most likely centrals
RA_CEN[5]	5 x FLOAT(8)	R.A. for 5 most likely centrals
DEC_CEN[5]	5 x FLOAT(8)	Decl. for 5 most likely centrals
ID_CEN[5]	5 x INT(8)	COADD_OBJECTS_ID for 5 most likely centrals
PZBINS[21]	21 x FLOAT(4)	Redshift points at which P(z) is evaluated
PZ[21]	21 x FLOAT(4)	P(z) evaluated at redshift points given by PZBINS

Member Catalog Format

See Rykoff et al. (2016), Table 9.

Column Name	Data Type	Description
ID	INT(4)	redMaPPer cluster identification number
RA	FLOAT(8)	Right ascension in decimal degrees (J2000)
DEC	FLOAT(8)	Declination in decimal degrees (J2000)
R	FLOAT(4)	Distance from cluster center (h^{-1} Mpc)
P	FLOAT(4)	Membership probability
P_FREE	FLOAT(4)	Probability that member is not a member of a higher-ranked cluster
THETA_L	FLOAT(4)	Luminosity (z-band) weight
THETA_R	FLOAT(4)	Radial weight
MAG_AUTO_G	FLOAT(4)	g MAG_AUTO magnitude for galaxy (SLR corrected)
MAGERR_AUTO_G	FLOAT(4)	error on g MAG_AUTO magnitude
MAG_AUTO_R	FLOAT(4)	r MAG_AUTO magnitude for galaxy (SLR corrected)
MAGERR_AUTO_R	FLOAT(4)	error on r MAG_AUTO magnitude
MAG_AUTO_I	FLOAT(4)	i MAG_AUTO magnitude for galaxy (SLR corrected)

MAGERR_AUTO_I	FLOAT(4)	error on i MAG_AUTO magnitude
MAG_AUTO_Z	FLOAT(4)	z MAG_AUTO magnitude for galaxy (SLR corrected)
MAGERR_AUTO_Z	FLOAT(4)	error on z MAG_AUTO magnitude
Z_SPEC	FLOAT(4)	Spectroscopic redshift (-1.0 if not available)
COADD_OBJECTS_ID	INT(8)	Unique object identifier (can be used to match against other SVA1 catalogs)

Zmask Format

See Rykoff et al. (2016), Table 10.

Column Name	Data Type	Description
HPIX	INT(8)	HEALPIX ring-ordered pixel number (nside=4096)
ZMAX	FLOAT(4)	Maximum redshift of a cluster centered in this pixel
FRACGOOD	FLOAT(4)	Fraction of pixel area that is not masked

Random Point Format

See Rykoff et al. (2016), Table 11.

Column Name	Data Type	Description
RA	FLOAT(8)	Right ascension in decimal degrees (J2000)
DEC	FLOAT(8)	Declination in decimal degrees (J2000)
Z	FLOAT(4)	Redshift of random point
LAMBDA	FLOAT(4)	Richness of random point
WEIGHT	FLOAT(4)	Weight of random point

Effective Area Format

See Rykoff et al. (2016), Table 12.

Column Name	Data Type	Description
Z	FLOAT(4)	Redshift cut
AREA	FLOAT(4)	Effective area (degree^2)

redMaGiC Catalog Format

See Rozo et al. (2015), Table B2.

Column Name	Data Type	Description
COADD_OBJECTS_ID	INT(8)	Unique object identifier (can be used to match against other SVA1 catalogs)
RA	FLOAT(8)	Right ascension in decimal degrees (J2000)
DEC	FLOAT(8)	Declination in decimal degrees (J2000)
MAG_AUTO_G	FLOAT(4)	g MAG_AUTO magnitude for galaxy (SLR corrected)

MAGERR_AUTO_G	FLOAT(4)	error on g MAG_AUTO magnitude
MAG_AUTO_R	FLOAT(4)	r MAG_AUTO magnitude for galaxy (SLR corrected)
MAGERR_AUTO_R	FLOAT(4)	error on r MAG_AUTO magnitude
MAG_AUTO_I	FLOAT(4)	i MAG_AUTO magnitude for galaxy (SLR corrected)
MAGERR_AUTO_I	FLOAT(4)	error on i MAG_AUTO magnitude
MAG_AUTO_Z	FLOAT(4)	z MAG_AUTO magnitude for galaxy (SLR corrected)
MAGERR_AUTO_Z	FLOAT(4)	error on z MAG_AUTO magnitude
MABS_G	FLOAT(4)	Absolute magnitude in g (k-corrected to z=0.1)
MABS_ERR_G	FLOAT(4)	Error on absolute magnitude in g
MABS_R	FLOAT(4)	Absolute magnitude in r
MABS_ERR_R	FLOAT(4)	Error on absolute magnitude in r
MABS_I	FLOAT(4)	Absolute magnitude in i
MABS_ERR_I	FLOAT(4)	Error on absolute magnitude in i
MABS_Z	FLOAT(4)	Absolute magnitude in z
MABS_ERR_Z	FLOAT(4)	Error on absolute magnitude in z
ZLUM	FLOAT(4)	z band luminosity, units of L_*
ZREDMAGIC	FLOAT(4)	redMaGiC photometric redshift
ZREDMAGIC_ERR	FLOAT(4)	error on redMaGiC photometric redshift
CHISQ	FLOAT(4)	chi^2 of fit to redMaGiC template
Z_SPEC	FLOAT(4)	spectroscopic redshift (-1.0 if not available)

The DES Data Management system is supported by the National Science Foundation under Grant Number (1138766).