Extreme emission-line galaxies out to z~1 in zCOSMOS. I. Sample and characterization of global properties.

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Abstract:
We present line measurements and physical properties of a sample of 165 extreme emission-line galaxies (EELGs) in the zCOSMOS 20k-Bright Survey (Lilly et al., 2009, Cat. J/ApJS/184/218). The zCOSMOS spectra consist of ~1h integrations in the medium resolution LRRED grism setting (R~600 with 2.5{AA}/pixel), covering a wavelength range 5550<{lambda}<9650{AA}. Measured emission-line fluxes are given in units of 10^-17^erg/s/cm^2^. Flux errors have been derived following Perez-Montero et al. (2013A&A...549A..25P) and Amorin et al. (2012ApJ...749..185A and 2012ApJ...754L..22A). No extinction correction has been applied to these fluxes. For each galaxy the reddening constant, c(H{beta}), is presented. These values and their corresponding uncertainties have been derived from the H{alpha}/H{beta} or H{gamma}/H{beta} ratios, whenever possible. A reddening constant derived from the SED best-fitting was adopted for (a) those galaxies where the computation of c(H{beta}) from emission lines is not possible because of the lack of lines, or (b) the corresponding line ratio produces a negative extinction correction (i.e., Ha/Hb<2.82 or Hg/Hb<0.47, assuming Case B recombination with T_e_=2*10^4K, n_e_=100cm^-3^). Stellar mass and 1{sigma} uncertainties have been obtained from SED fitting (Bolzonella et al., 2010A&A...524A..76B) after removal of the flux contribution from strong emission lines.

Description:
Star formation rates have been computed from H{alpha} or H{beta} luminosity (IMF from Chabrier et al. (2003PASP..115..763C) and assuming a theoretical ratio H{alpha}/H{beta}=2.82) following Kennicutt (1998ApJ...498..541K). Uncertainties in SFR account for the propagation of errors in line fluxes and reddening. Gas-phase metallicity has been derived using four methods: (1) the direct method (Hagele et al., 2008MNRAS.383..209H); (2) the T_e_-Z correlation (This work); (3) the N2 calibration (Perez-Montero & Contini, 2009MNRAS.398..949P); and (4) the R23 calibration (McGaugh, 1991ApJ...380..140M) scaled to the direct method using the linear relation presented by Lamareille et al. (2006, Cat. J/A+A/448/893 and 2006A&A...448..907L, see also Perez-Montero et al., 2013A&A...549A..25P). In all cases, 1{sigma} uncertainties in metallicity account for the propagated errors in line fluxes and reddening.

File Summary:

FileName	Lrecl	Records	Explanations
ReadMe	80	.	This file
table1.dat	141	165	Emission line fluxes and reddening
table2.dat	80	165	Derived physical properties of EELGs in zCOSMOS

See also:
    J/ApJS/184/218 : The zCOSMOS 10k-bright spectroscopic sample (Lilly+, 2009)

Byte-by-byte Description of file: table1.dat

Bytes	Format	Units	Label	Explanations
1- 6	I6	---	zCOSMOS	zCOSMOS ID NUMBER
8- 17	F10.6	deg	RAdeg	Right ascension (J2000.0)
19- 26	F8.6	deg	DEdeg	Declination (J2000.0)
28- 32	F5.3	---	z	[0.1/1.0] Spectroscopic redshift
34- 39	F6.2	10-20W/m2	F(3727)	?=-9.9 [OII]3727 line flux
41- 44	F4.1	10-20W/m2	e_F(3727)	?=-9.9 error in [OII]3727 line flux
46- 49	F4.1	10-20W/m2	F(Hg)	?=-9.9 H{gamma} line flux
51- 54	F4.1	10-20W/m2	e_F(Hg)	?=-9.9 error in H{gamma} line flux
56- 59	F4.1	10-20W/m2	F(4363)	?=-9.9 [OIII]4363 line flux
61- 64	F4.1	10-20W/m2	e_F(4363)	?=-9.9 error in [OIII]4363 line flux
66- 70	F5.2	10-20W/m2	F(Hb)	?=-9.9 H{beta} line flux
72- 75	F4.1	10-20W/m2	e_F(Hb)	?=-9.9 error in H{beta} line flux
77- 82	F6.2	10-20W/m2	F(4959)	?=-9.9 [OIII]4959 line flux
84- 87	F4.1	10-20W/m2	e_F(4959)	?=-9.9 error in [OIII]4959 line flux
89- 94	F6.2	10-20W/m2	F(5007)	?=-9.9 [OIII]5007 line flux
96- 98	F3.1	10-20W/m2	e_F(5007)	?=-9.9 error in [OIII]5007 line flux
100-105	F6.2	10-20W/m2	F(Ha)	?=-9.9 H{alpha} line flux
107-110	F4.1	10-20W/m2	e_F(Ha)	?=-9.9 error in H{alpha} line flux
112-116	F5.2	10-20W/m2	F(6584)	?=-9.9 [NII]6584 line flux
118-121	F4.1	10-20W/m2	e_F(6584)	?=-9.9 error in [NII]6584 line flux
123-126	F4.1	10-20W/m2	F(6717)	?=-9.9 [SII]6717 line flux
128-131	F4.1	10-20W/m2	e_F(6717)	?=-9.9 error in [SII]6717 line flux
133-136	F4.1	10-20W/m2	F(6730)	?=-9.9 [SII]6730 line flux
138-141	F4.1	10-20W/m2	e_F(6730)	?=-9.9 error in [SII]6730 line flux

Byte-by-byte Description of file: table2.dat

Bytes	Format	Units	Label	Explanations
1- 6	I6	---	zCOSMOS	zCOSMOS ID number
8	I1	---	MT	[1/4] Morphological Type (1)
10- 15	F6.2	mag	BMAG	?=-9.9 Rest-frame B-band absolute magnitude
17- 21	F5.2	[Lsun]	logLFUV	?=-9.9 Rest-frame, dust corrected, far-UV (FUV) luminosity
23- 27	F5.2	kpc	r50	?=-9.9 Circularized half-light radius
29- 33	F5.2	[Msun]	logMs	?=-9.9 Logarithm of stellar mass (2)
36- 39	F4.2	[Msun]	e_logMs	?=-9.9 Uncertainty in stellar mass (3)
41- 46	F6.3	[Msun/yr]	logSFR	?=-9.9 Logarithm of star formation rate (4)
47- 51	F5.2	[Msun/yr]	e_logSFR	?=-9.9 Uncertainty in log_SFR (5)
54- 57	F4.2	---	c(Hb)	?=-9.9 Reddening constant, c(H{beta})
59- 62	F4.2	---	e_c(Hb)	?=-9.9 error in the reddening constant
64	A1	---	n_c(Hb)	[abc] Method for the reddening constant (6)
66- 70	F5.2	---	Ab(O)	?=-9.9 Gas-phase metallicity 12+log(O/H)
72- 76	F5.2	---	e_Ab(O)	?=-9.9 Uncertainty in metallicity (5)
79- 80	I2	---	n_Ab(O)	[1/4]?=-9 Method for metallicity (7)

Note (1): Morphological Type as follows:
  1 = Round/nucleated
  2 = Clumpy/Chain
  3 = Tadpole/cometary
  4 = Merger/interacting
Note (2): A Chabrier IMF was adopted.
Note (3): They account for the statistical uncertainties in the SED fitting.
Note (4): It is computed from H{alpha} or H{beta} luminosity and adopting the
  Kennicutt (1998ApJ...498..541K) calibration (by assuming a Chabrier et al.
  (2003PASP..115..763C) IMF and a theoretical ratio H{alpha}/H{beta}=2.82).
Note (5): 1{sigma} error, it accounts for the propagation of errors in line
  fluxes and reddening
Note (6): Method for the reddening constant as follows:
  a = from H{alpha}/H{beta}
  b = from H{gamma}/H{beta}

  c = from the SED best-fitting
Note (7): Method for gas-phase metallicity as follows:
  1 = Direct (T_e_) method following Hagele et al. (2008MNRAS.383..209H)
  2 = T(OIII)-Z calibration (This work)
  3 = N2 calibration from Perez-Montero & Contini (2009MNRAS.398..949P)
  4 = R23 calibration from McGaugh (1991ApJ...380..140M) scaled to the direct
      method using the linear relation presented by Lamareille et al.
      (2006, Cat. J/A+A/448/893 and 2006A&A...448..907L) (see also
      Perez-Montero et al. 2013A&A...549A..25P)

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