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J/A+A/599/A95 Star formation in z~1.5 quiescent galaxies (Gobat+, 2017)

In and out star formation in z~1.5 quiescent galaxies from rest-frame UV spectroscopy and the far infrared.
Gobat R., Daddi E., Strazzullo V., Garilli B., Mignoli M., Ma Z., Jin S., Maraston C., Bethermin M., Cappellari M., Carollo M., Cimatti A., Feruglio C., Moresco M., Onodera M., Pozzetti L., Renzini A., Valentino F., Zanella A.
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=[2017A&A...599A..95G](#) (SIMBAD/NED BibCode)

ADC_Keywords: Galaxies, spectra

Keywords: galaxies: high-redshift - galaxies: elliptical and lenticular, cD - galaxies: formation - galaxies: stellar content - galaxies: star formation

Abstract:
We present a sample of 34 spectroscopically confirmed BzK-selected $\sim 10^{11} M_{\odot}$ quiescent galaxies (pBzK) in the COSMOS field. The targets were initially observed with VIMOS on the VLT to facilitate the calibration of the photometric redshifts of massive galaxies at $z \gtrsim 1.5$. Here we describe the reduction and analysis of the data, and the spectrophotometric properties of these pBzK galaxies. In particular, using a spatially resolved median 2D spectrum, we find that the fraction of stellar populations with ages $< 1 \text{ Gyr}$ is at least 3 times higher in the outer regions of the pBzK galaxies than in their cores. This results in a mild age gradient of $\Delta \text{age} \leq 0.4 \text{ Gyr}$ over $\sim 6 \text{ kpc}$ and suggests either the occurrence of widespread rejuvenation episodes or that inside-out quenching played a role in the passivization of this galaxy population. We also report on low-level star formation rates derived from the $[\text{OII}]\lambda 3727 \text{ \AA}$ emission line, with $\text{SFR}_{\text{OII}} \sim 3.7\text{--}4.5 M_{\odot}/\text{yr}$. This estimate is confirmed by an independent measurement on a separate sample of similarly-selected quiescent galaxies in the COSMOS field, using stacked far-infrared data ($\text{SFR}_{\text{FIR}} \sim 2\text{--}4 M_{\odot}/\text{yr}$). This second, photometric sample also displays significant excess at 1.4 GHz, suggestive of the presence of radio-mode AGN activity.

Description:
Median VIMOS spectrum of 31 BzK-selected massive quiescent galaxies in the COSMOS field, with a median redshift of $z=1.5$. The observations were carried out during ESO programs 086.A-0681 and 088.A-0671 using the medium resolution grism and GG475 order-sorting filter, with a slit width of 1-arcsec. The 2D data were reduced with VIPGI pipeline, and corrected for redshift and cosmological dimming before stacking. The 1D spectrum was extracted using a 12-pixel aperture.

File Summary:

FileName	Lrecl	Records	Explanations
ReadMe	80	.	This file
table1.dat	23	1599	Median 1D VIMOS spectrum of z~1.5 ETGs

Byte-by-byte Description of file: [table1.dat](#)

Bytes	Format	Units	Label	Explanations
1- 7	F7.2	0.1nm	lambda	Rest-frame wavelength
10- 15	F6.4	---	Flux	Flux, F(lambda) (1)
18- 23	F6.4	---	e_Flux	Standard error on Flux (1)

Note (1): Flux and standard error are in arbitrary units.

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Raphael Gobat, [rgobat\(at\)kias.re.kr](mailto:rgobat(at)kias.re.kr)

(End) Raphael Gobat [KIAS, South Korea], Patricia Vannier [CDS] 27-Dec-2016

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](#)