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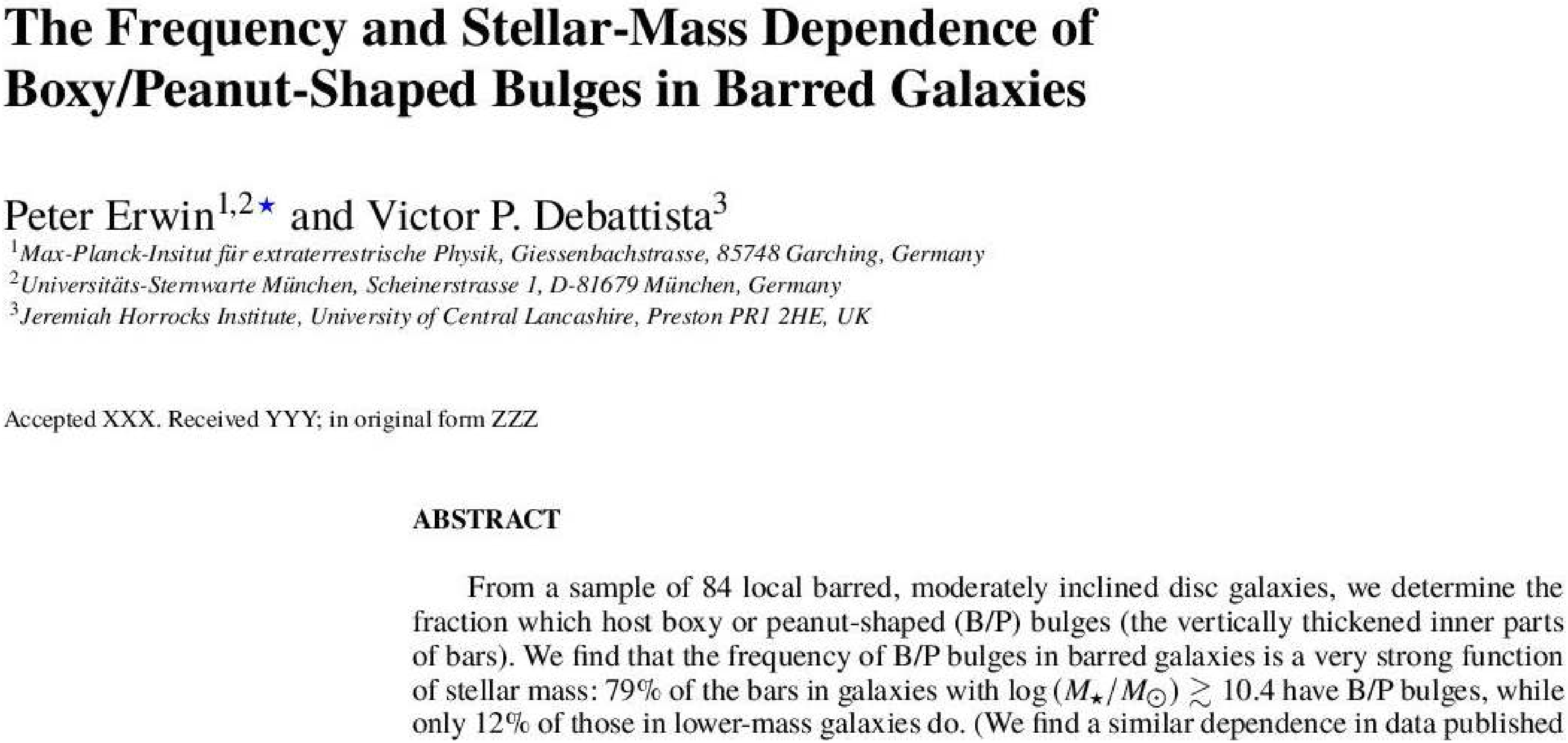
От Сильченко О.К.

Astro-ph: 1703.01602



The Frequency and Stellar-Mass Dependence of Boxy/Peanut-Shaped Bulges in Barred Galaxies

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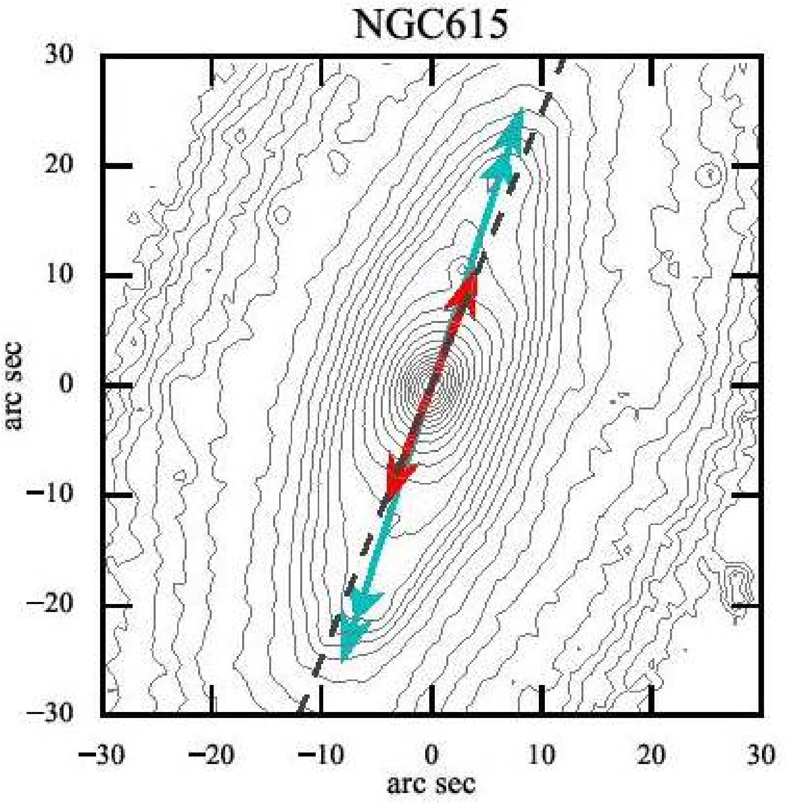
ABSTRACT

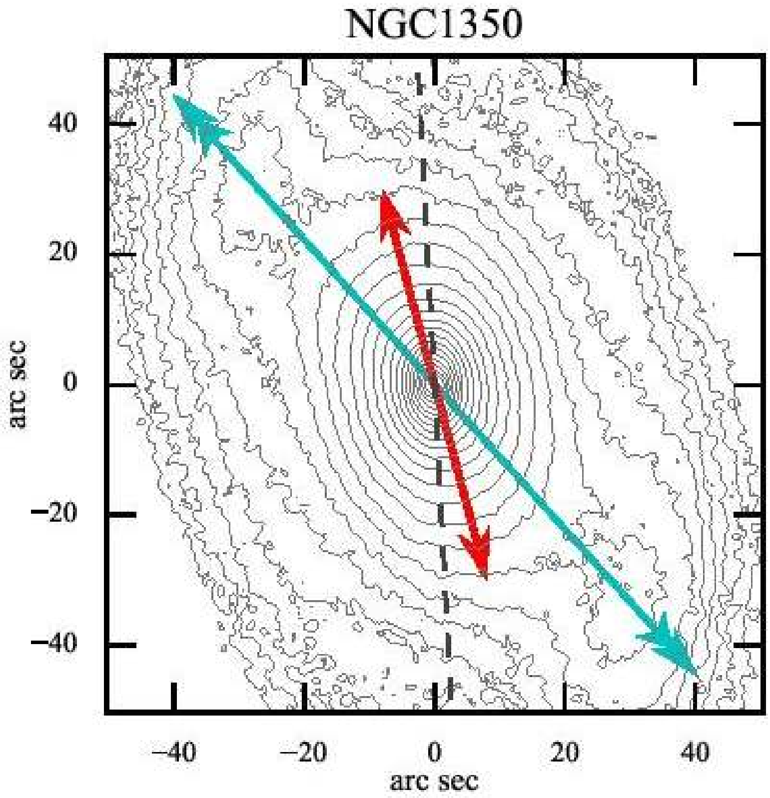
From a sample of 84 local barred, moderately inclined disc galaxies, we determine the fraction which host boxy or peanut-shaped (B/P) bulges (the vertically thickened inner parts of bars). We find that the frequency of B/P bulges in barred galaxies is a very strong function of stellar mass: 79% of the bars in galaxies with $\log(M_\star/M_\odot) \gtrsim 10.4$ have B/P bulges, while only 12% of those in lower-mass galaxies do. (We find a similar dependence in data published

Выборка

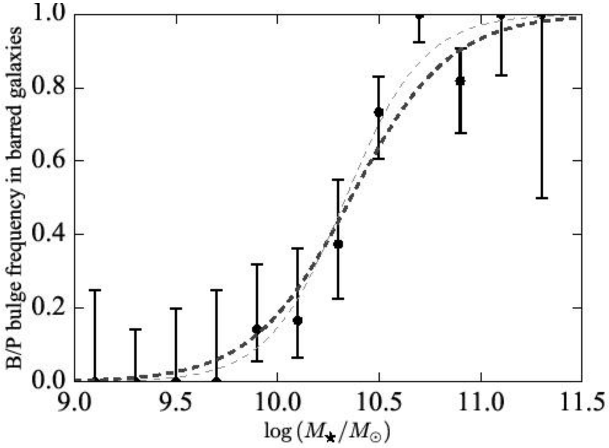
- Тип от S0 до Sd
- Наклон от 40 до 60 градусов
- Расстояние до 2000 км/с, но плюс Virgo
- Инфракрасные изображения, в основном из S4G, + NIRS0S + HST + …
- 84 объекта в конце концов

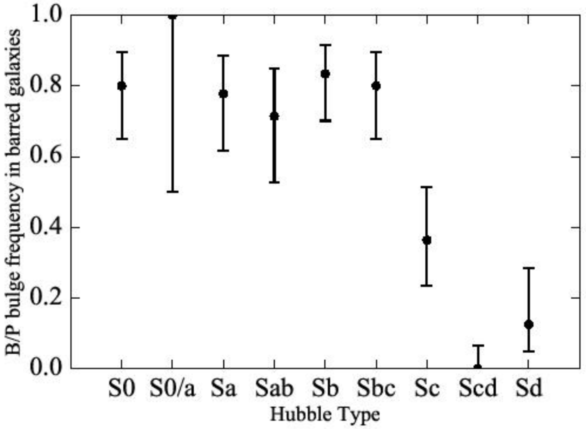
Ориентация линии узлов, бара, большой оси балджа

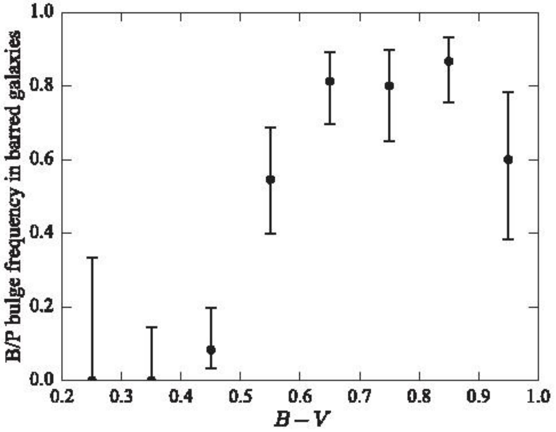


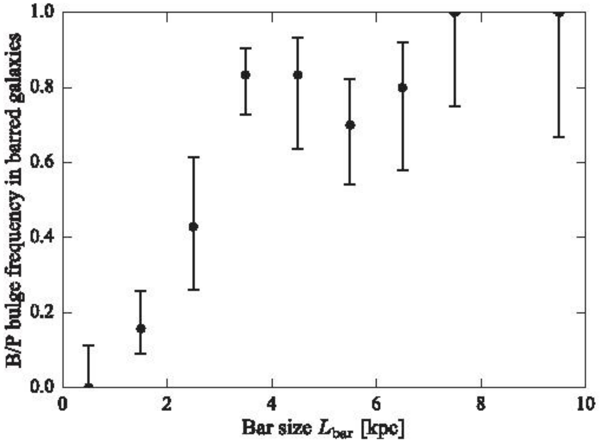


Главным параметром они считают массу галактики









Сравнение с галактиками БЕЗ peanut bulges

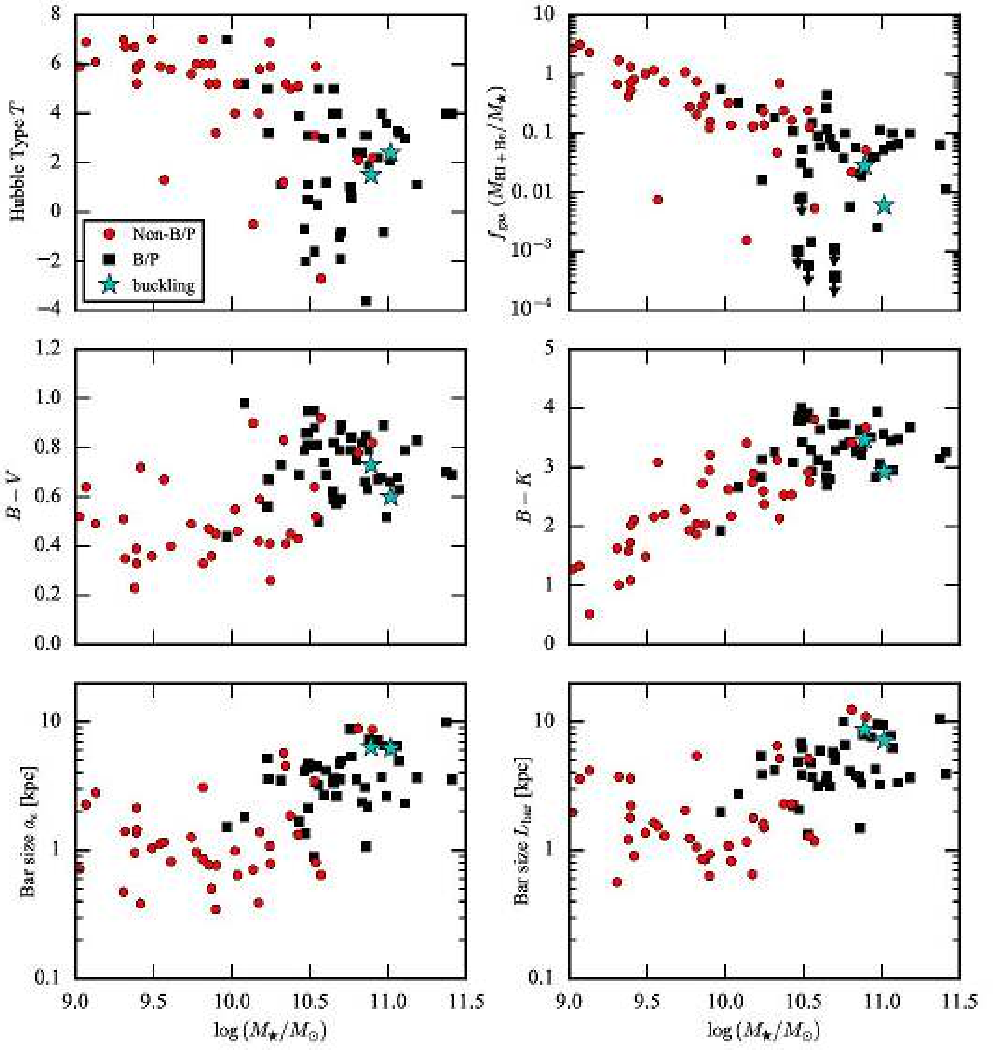


Figure 10. Various barred-galaxy properties – Hubble type T, gas mass ratio (including five galaxies with H I upper limits), colour, bar size – as a function of stellar mass for the GoodPA sample, showing galaxies with B/P bulges (solid black squares)] and without (red circles). Cyan stars indicate the buckling bars in NGC 3227 and NGC 4569. In all cases, the correlation between B/P state and stellar mass is the dominant one.

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No evidence for small disk-like bulges in a sample of late-type spirals

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Выборка

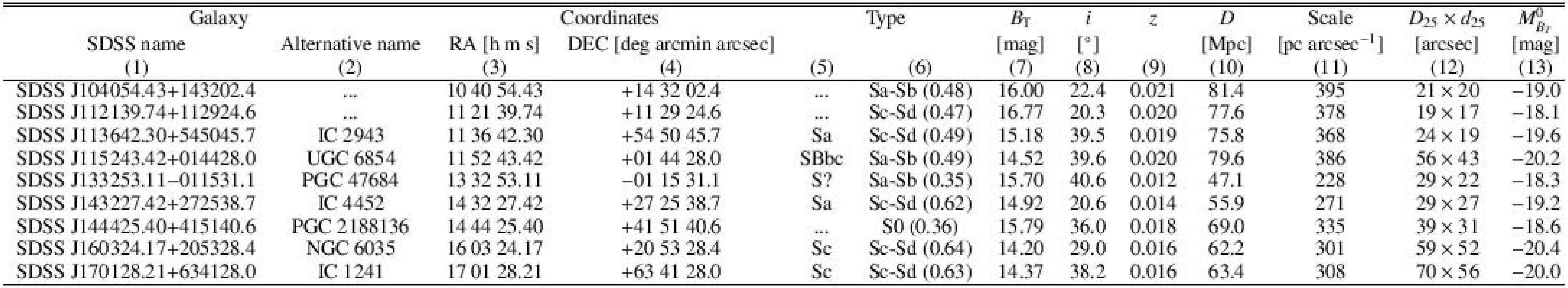
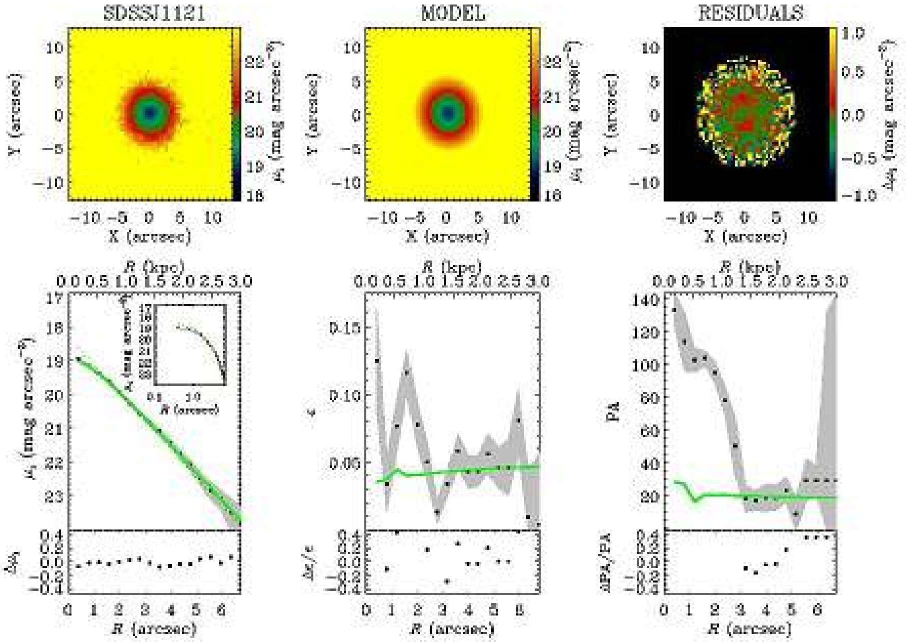
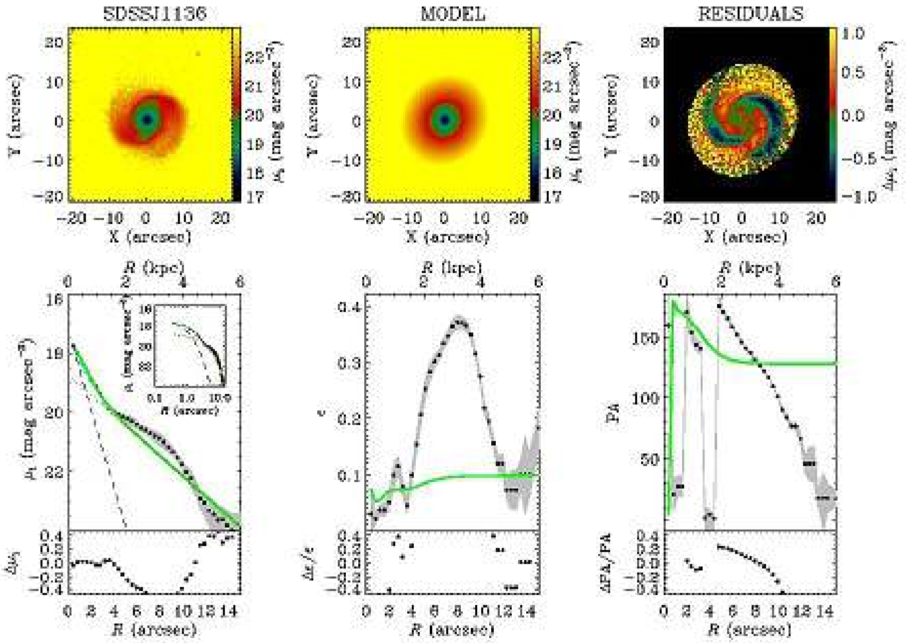


Table 1: Properties of the sample galaxies.

Galaxy		Coordinates		Type		B_{T}	i	z	D	Scale	$D_{25} \times d_{25}$	$M^0_{B_T}$
SDSS name	Alternative name	RA [h m s]	DEC [deg arcmin arcsec]			[mag]	[°]		[Mpc]	[pc arcsec^{-1}]	[arcsec]	[mag]
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
SDSS J104054.43+143202.4	...	10 40 54.43	+14 32 02.4	...	Sa-Sb (0.48)	16.00	22.4	0.021	81.4	395	21 × 20	−19.0
SDSS J112139.74+112924.6	...	11 21 39.74	+11 29 24.6	...	Sc-Sd (0.47)	16.77	20.3	0.020	77.6	378	19 × 17	−18.1
SDSS J113642.30+545045.7	IC 2943	11 36 42.30	+54 50 45.7	Sa	Sc-Sd (0.49)	15.18	39.5	0.019	75.8	368	24 × 19	−19.6
SDSS J115243.42+014428.0	UGC 6854	11 52 43.42	+01 44 28.0	SBbc	Sa-Sb (0.49)	14.52	39.6	0.020	79.6	386	56 × 43	−20.2
SDSS J133253.11−011531.1	PGC 47684	13 32 53.11	−01 15 31.1	S?	Sa-Sb (0.35)	15.70	40.6	0.012	47.1	228	29 × 22	−18.3
SDSS J143227.42+272538.7	IC 4452	14 32 27.42	+27 25 38.7	Sa	Sc-Sd (0.62)	14.92	20.6	0.014	55.9	271	29 × 27	−19.2
SDSS J144425.40+415140.6	PGC 2188136	14 44 25.40	+41 51 40.6	...	S0 (0.36)	15.79	36.0	0.018	69.0	335	39 × 31	−18.6
SDSS J160324.17+205328.4	NGC 6035	16 03 24.17	+20 53 28.4	Sc	Sc-Sd (0.64)	14.20	29.0	0.016	62.2	301	59 × 52	−20.4
SDSS J170128.21+634128.0	IC 1241	17 01 28.21	+63 41 28.0	Sc	Sc-Sd (0.63)	14.37	38.2	0.016	63.4	308	70 × 56	−20.0

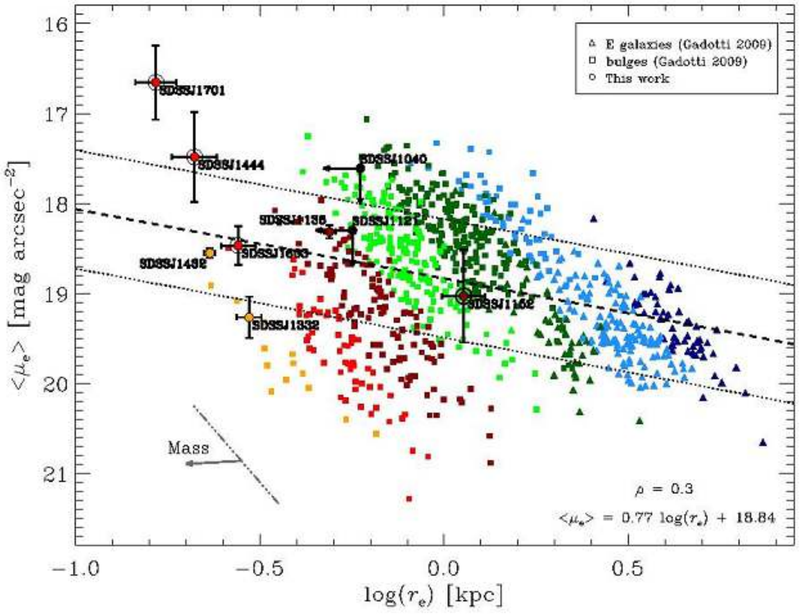

SDSSJ1121
MODEL
RESIDUALS
X (arcsec)
Y (arcsec)
μ_i (mag arcsec^{-2})
$\Delta\mu_i$ (mag arcsec^{-2})
R (kpc)
R (arcsec)
μ_i (mag arcsec^{-2})
$\Delta\mu_i$
ϵ
$\Delta\epsilon/\epsilon$
PA
ΔPA/PA


SDSSJ1136
MODEL
RESIDUALS
X (arcsec)
Y (arcsec)
μ_i (mag arcsec^{-2})
$\Delta\mu_i$ (mag arcsec^{-2})
R (kpc)
R (arcsec)
μ_i (mag arcsec^{-2})
$\Delta\mu_i$
ϵ
$\Delta\epsilon/\epsilon$
PA
ΔPA/PA

Маленькие балджи…

- Вкладывают в общую светимость в среднем 10%,
- Имеют в среднем экспоненциальные профили яркости,

НО подчиняются всем шкалирующим зависимостям сфероидов (фундаментальная плоскость, Фабер-Джексон, Корменди…) и динамически горячи!



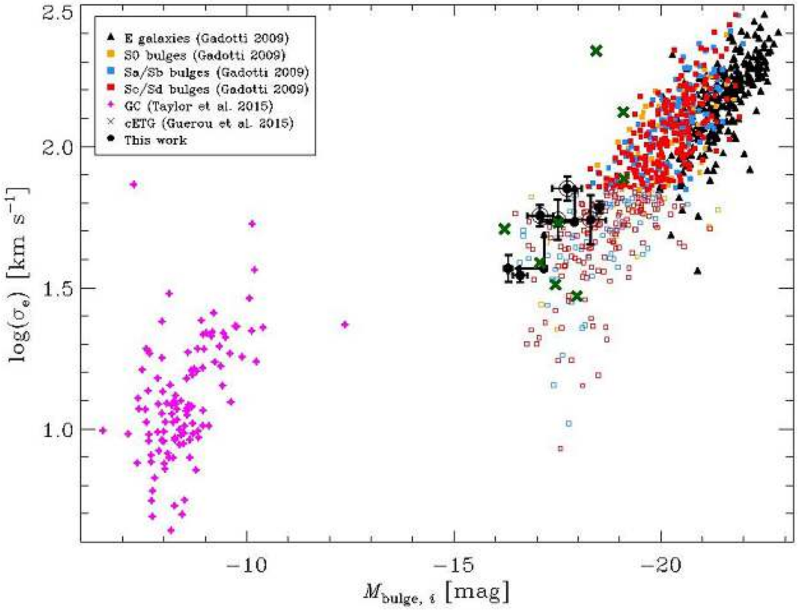
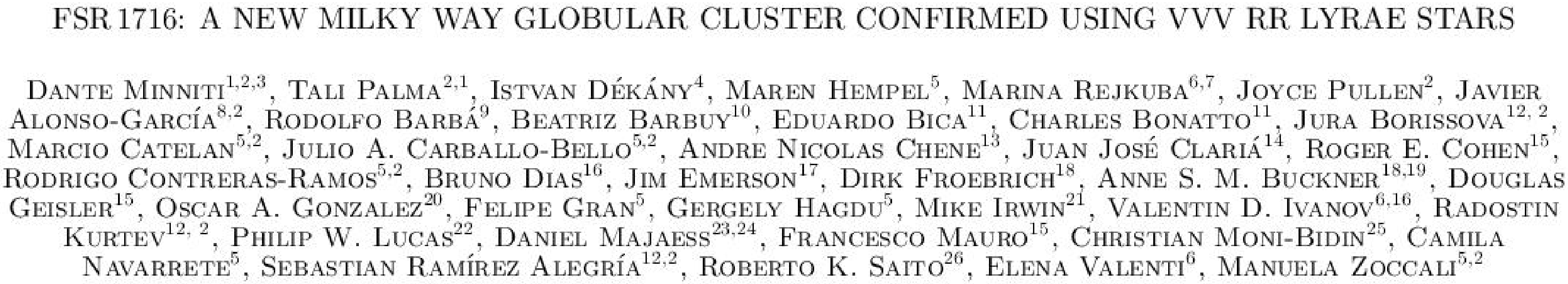


Fig. 5: KR for the galaxies of our (larger symbols) and comparison sample (smaller symbols). The ellipticals and bulges of the comparison sample are shown with triangles and squares, respectively. Filled circles with and without error bars correspond to the galaxies in our sample with and without bulge, respectively. Open circles mark the barred galaxies. The galaxies are divided according to their absolute magnitude in the following bins: $M_i < -22$ mag (dark blue), $M_i = [-22, -21]$ mag (light blue), $M_i = [-21, -20]$ mag (dark green), $M_i = [-20, -19]$ mag (light green), $M_i = [-19, -18]$ mag (dark red), $M_i = [-18, -17]$ mag (light red), and $M_i = [-17, -16]$ mag (orange). The dashed line is the best-fitting relation for the comparison sample. The dotted lines show the rms deviation in $\langle\mu_e\rangle$ from the fit. The dash-dotted line gives the slope of the KR for the magnitude bin $M_i = [-20, -19]$ mag, while the arrow indicates the KR trend for decreasing masses (Nigoche-Netro et al. 2008). The best-fitting relation and Pearson correlation coefficient are also given.

Astro-ph: 1703.02033



FSR 1716: A NEW MILKY WAY GLOBULAR CLUSTER CONFIRMED USING VVV RR LYRAE STARS

Dante Minniti[1,2,3], Tali Palma[2,1], Istvan Dékány[4], Maren Hempel[5], Marina Rejkuba[6,7], Joyce Pullen[2], Javier Alonso-García[8,2], Rodolfo Barbá[9], Beatriz Barbuy[10], Eduardo Bica[11], Charles Bonatto[11], Jura Borissova[12, 2], Marcio Catelan[5,2], Julio A. Carballo-Bello[5,2], Andre Nicolas Chene[13], Juan José Clariá[14], Roger E. Cohen[15], Rodrigo Contreras-Ramos[5,2], Bruno Dias[16], Jim Emerson[17], Dirk Froebrich[18], Anne S. M. Buckner[18,19], Douglas Geisler[15], Oscar A. Gonzalez[20], Felipe Gran[5], Gergely Hagdu[5], Mike Irwin[21], Valentin D. Ivanov[6,16], Radostin Kurtev[12, 2], Philip W. Lucas[22], Daniel Majaess[23,24], Francesco Mauro[15], Christian Moni-Bidin[25], Camila Navarrete[5], Sebastian Ramírez Alegría[12,2], Roberto K. Saito[26], Elena Valenti[6], Manuela Zoccali[5,2]

Поле на галактической широте 1.5 градуса…

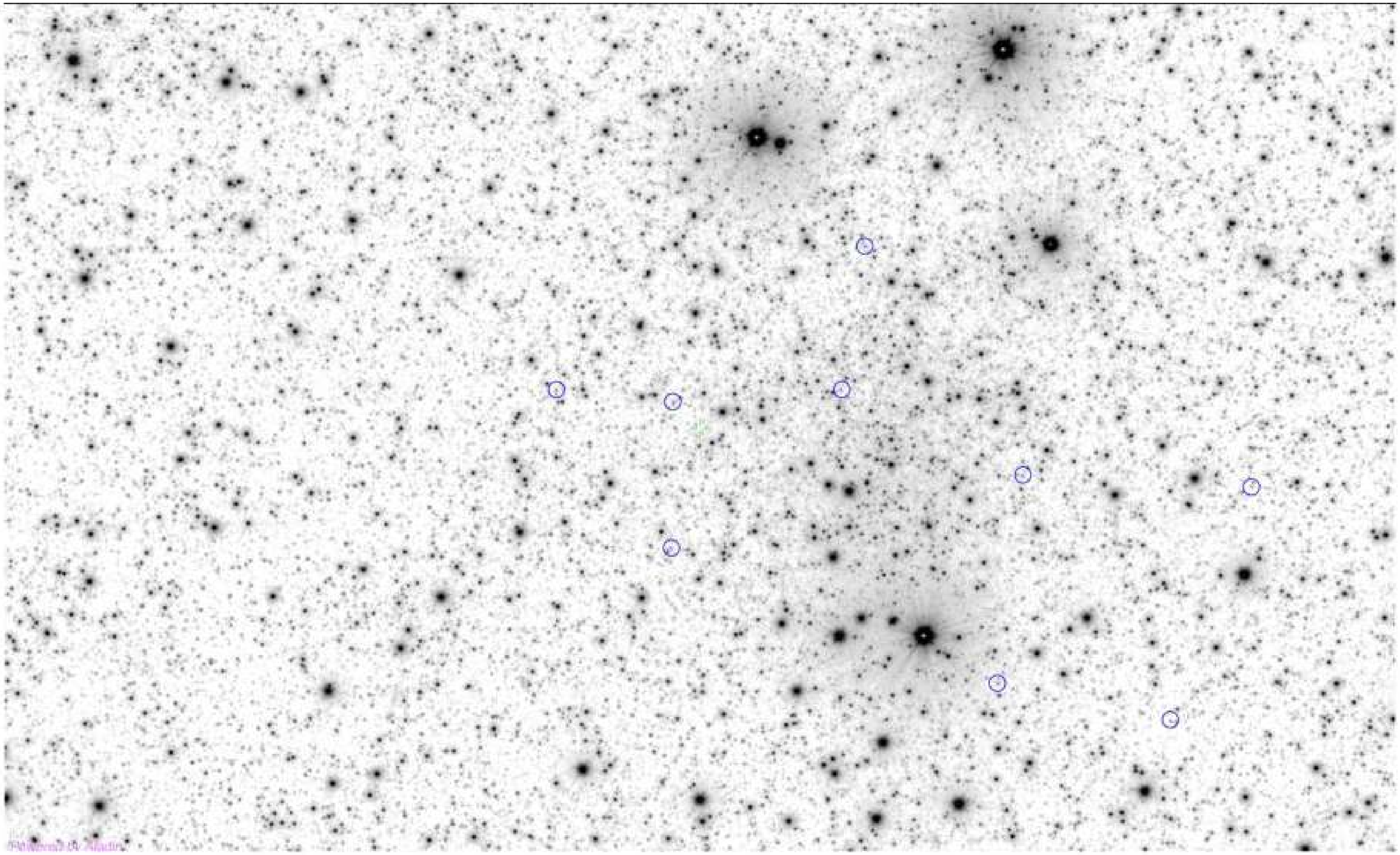
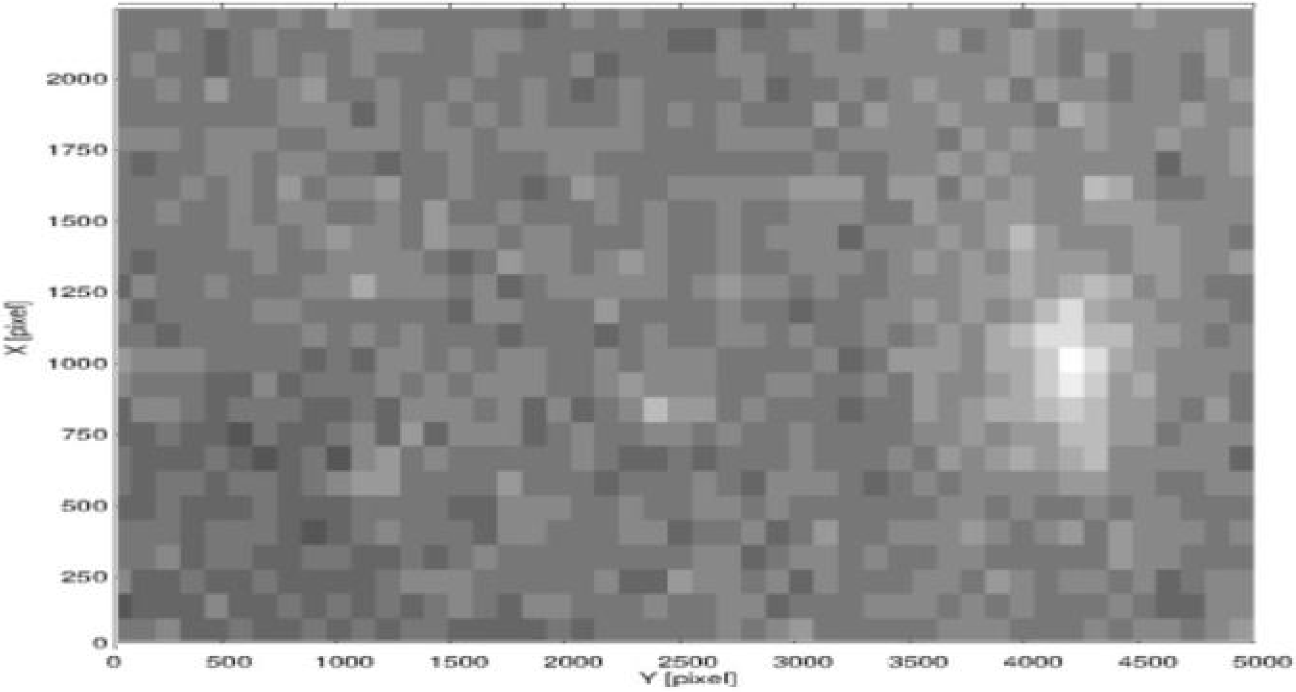
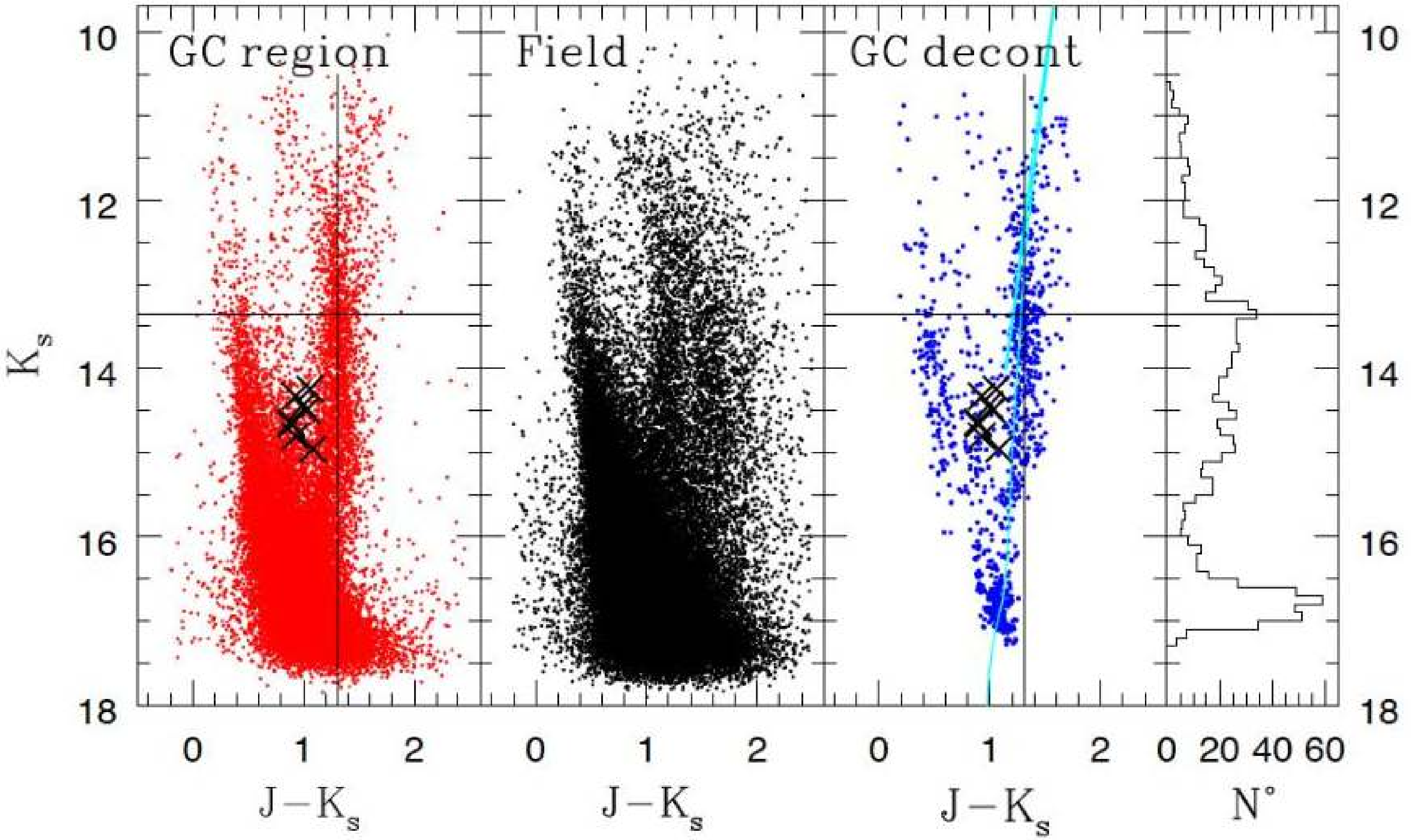


Figure 2. Illustration of the cluster stellar field. Deep Ks-band image of the field of the new globular cluster FSR 1716

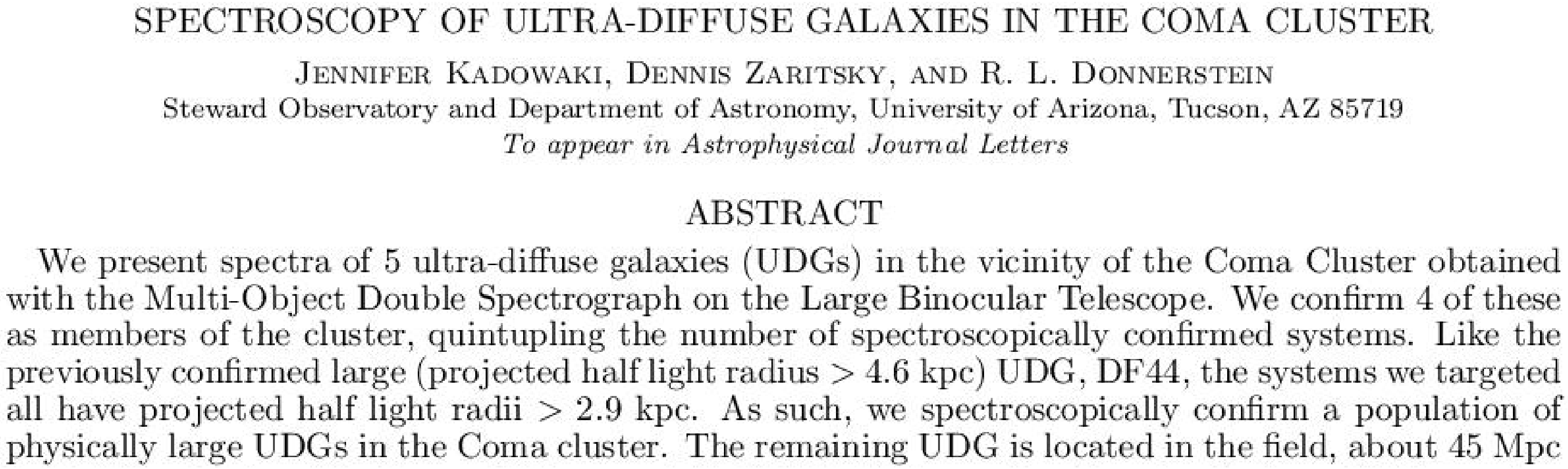
И распределение плотности на нем:



Параметры: металличность -1.5, расстояние 7.5 кпк



Astro-ph: 1703.02042



SPECTROSCOPY OF ULTRA-DIFFUSE GALAXIES IN THE COMA CLUSTER

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To appear in Astrophysical Journal Letters

ABSTRACT

We present spectra of 5 ultra-diffuse galaxies (UDGs) in the vicinity of the Coma Cluster obtained with the Multi-Object Double Spectrograph on the Large Binocular Telescope. We confirm 4 of these as members of the cluster, quintupling the number of spectroscopically confirmed systems. Like the previously confirmed large (projected half light radius > 4.6 kpc) UDG, DF44, the systems we targeted all have projected half light radii > 2.9 kpc. As such, we spectroscopically confirm a population of physically large UDGs in the Coma cluster. The remaining UDG is located in the field, about 45 Mpc

Выборка

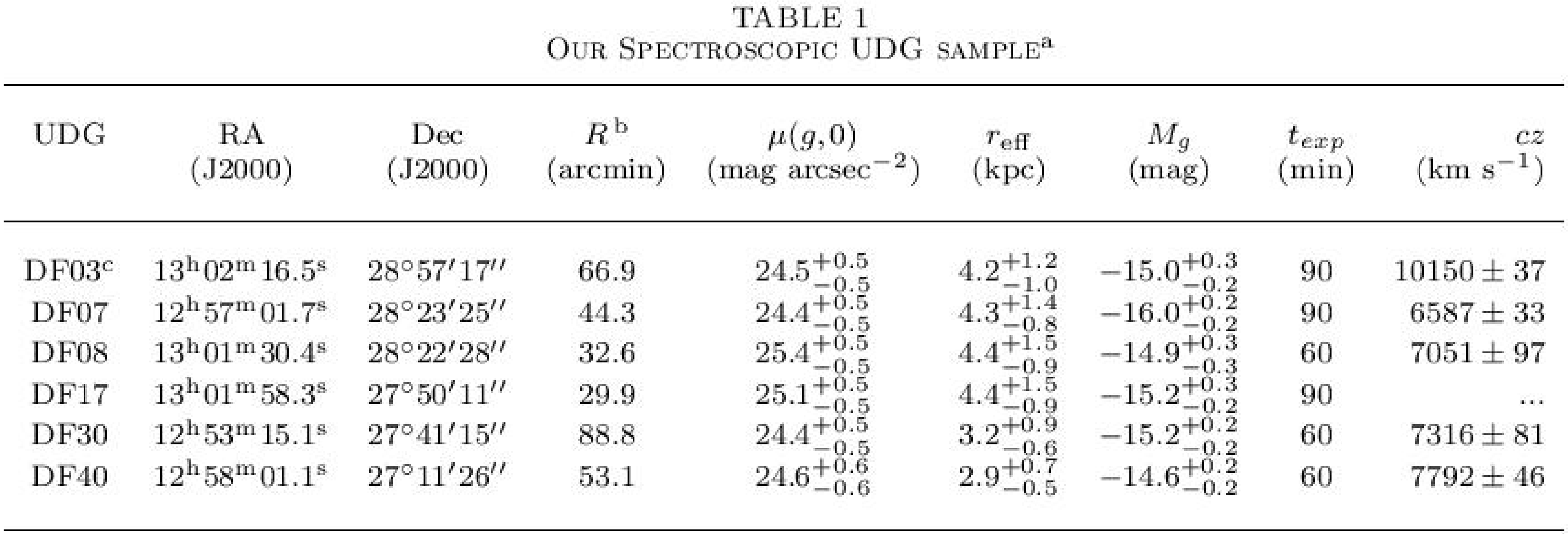


TABLE 1

OUR SPECTROSCOPIC UDG SAMPLE[a]

UDG	RA (J2000)	Dec (J2000)	R [b] (arcmin)	$\mu(g,0)$ (mag arcsec^{-2})	$r_{\rm eff}$ (kpc)	M_g (mag)	t_{exp} (min)	cz (km s^{-1})
DF03[c]	$13^{\rm h}02^{\rm m}16.5^{\rm s}$	$28^\circ57'17''$	66.9	$24.5^{+0.5}_{-0.5}$	$4.2^{+1.2}_{-1.0}$	$-15.0^{+0.3}_{-0.2}$	90	10150 ± 37
DF07	$12^{\rm h}57^{\rm m}01.7^{\rm s}$	$28^\circ23'25''$	44.3	$24.4^{+0.5}_{-0.5}$	$4.3^{+1.4}_{-0.8}$	$-16.0^{+0.2}_{-0.2}$	90	6587 ± 33
DF08	$13^{\rm h}01^{\rm m}30.4^{\rm s}$	$28^\circ22'28''$	32.6	$25.4^{+0.5}_{-0.5}$	$4.4^{+1.5}_{-0.9}$	$-14.9^{+0.3}_{-0.3}$	60	7051 ± 97
DF17	$13^{\rm h}01^{\rm m}58.3^{\rm s}$	$27^\circ50'11''$	29.9	$25.1^{+0.5}_{-0.5}$	$4.4^{+1.5}_{-0.9}$	$-15.2^{+0.3}_{-0.2}$	90	...
DF30	$12^{\rm h}53^{\rm m}15.1^{\rm s}$	$27^\circ41'15''$	88.8	$24.4^{+0.5}_{-0.5}$	$3.2^{+0.9}_{-0.6}$	$-15.2^{+0.2}_{-0.2}$	60	7316 ± 81
DF40	$12^{\rm h}58^{\rm m}01.1^{\rm s}$	$27^\circ11'26''$	53.1	$24.6^{+0.6}_{-0.6}$	$2.9^{+0.7}_{-0.5}$	$-14.6^{+0.2}_{-0.2}$	60	7792 ± 46

Индивидуальные спектры

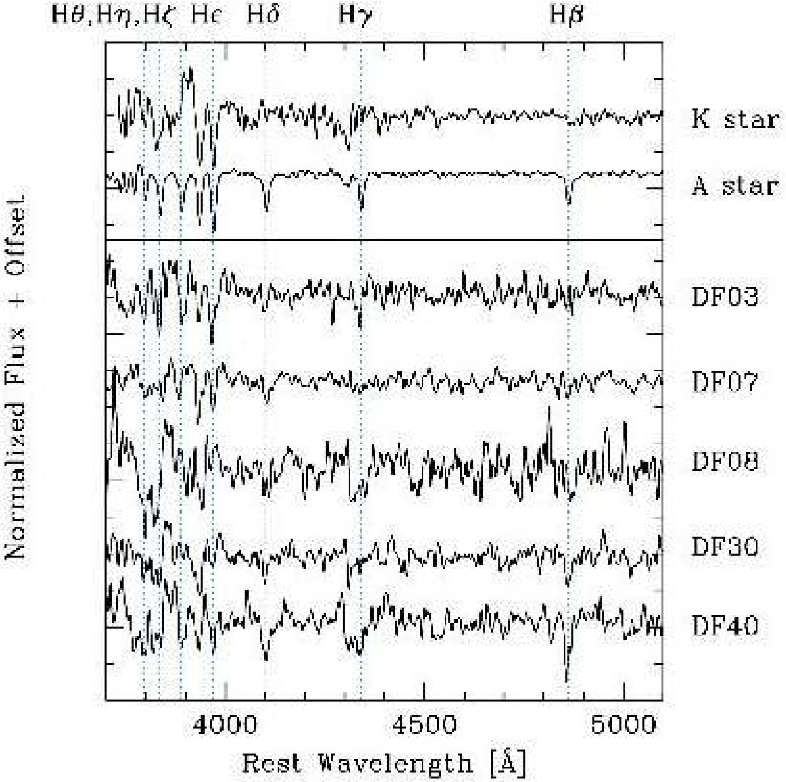


FIG. 1.— Rest-frame, continuum-subtracted spectra of the observed UDGs for which we can measure a reliable redshift. Figure 4 highlights the oxygen emission lines in DF08. We include the A and K-type continuum-subtracted stellar spectra for comparison. We label the Balmer lines to guide the eye.

Суммарный спектр и модели

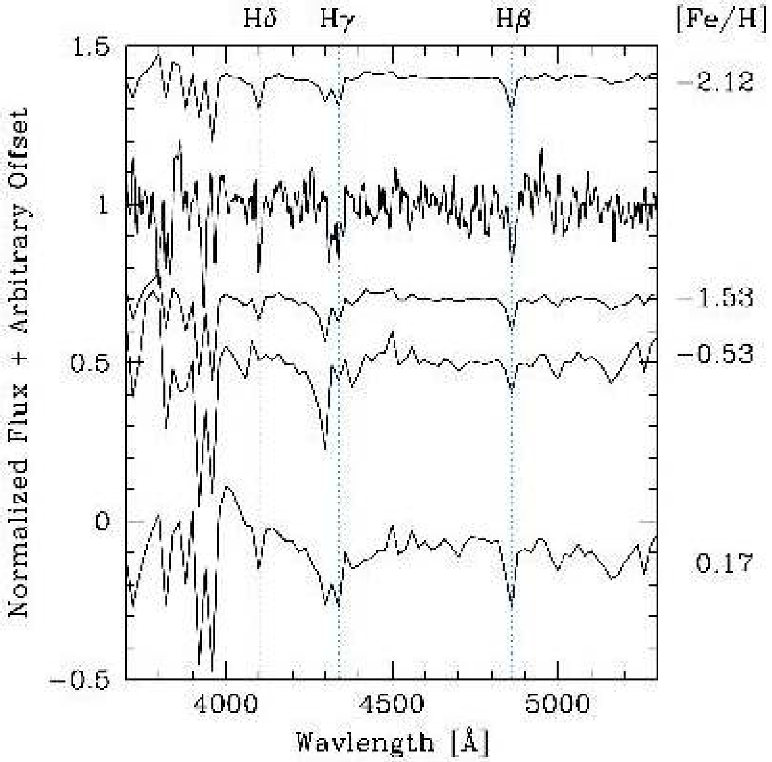
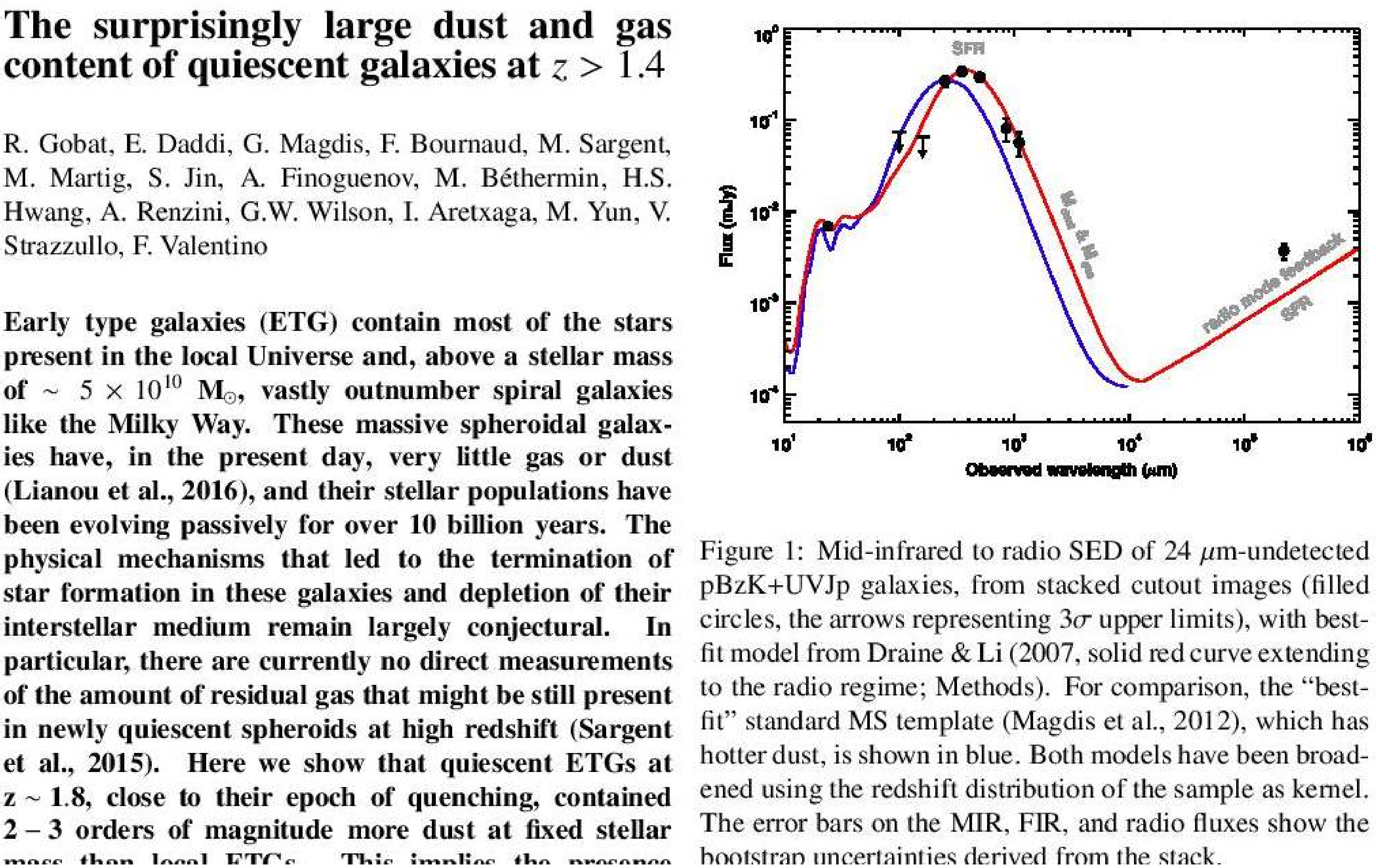


FIG. 3.— A comparison of the UDG composite spectrum (second from the top) and modeled stellar population spectra of differing metallicity and age (continuum subtracted in all cases). The composite includes all five of our UDGs. We have placed it, on the

Astro-ph: 1703.02207(Nature)

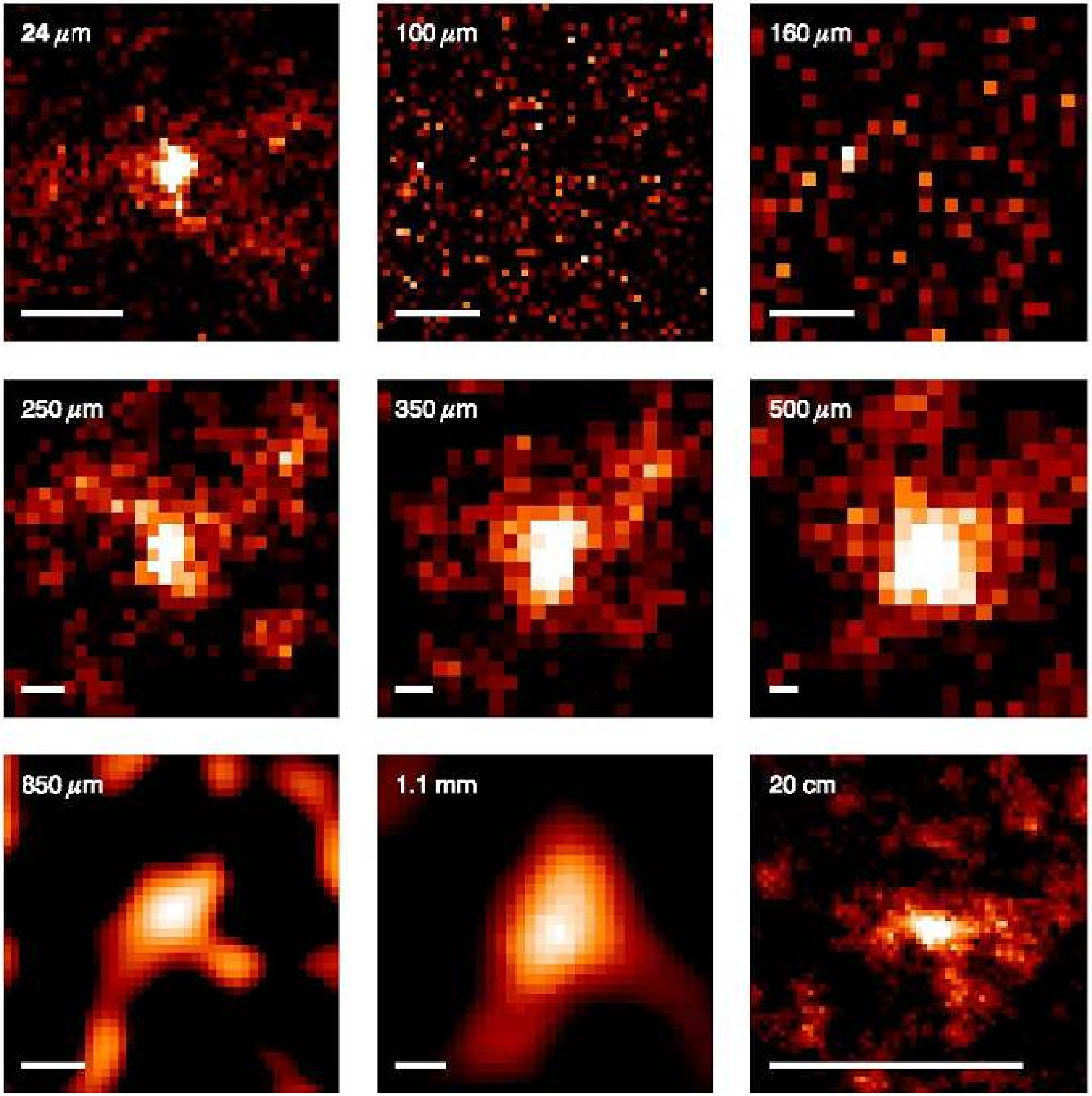


The surprisingly large dust and gas content of quiescent galaxies at $z > 1.4$

R. Gobat, E. Daddi, G. Magdis, F. Bournaud, M. Sargent, M. Martig, S. Jin, A. Finoguenov, M. Béthermin, H.S. Hwang, A. Renzini, G.W. Wilson, I. Aretxaga, M. Yun, V. Strazzullo, F. Valentino

Early type galaxies (ETG) contain most of the stars present in the local Universe and, above a stellar mass of $\sim 5 \times 10^{10}$ $M_\odot$, vastly outnumber spiral galaxies like the Milky Way. These massive spheroidal galaxies have, in the present day, very little gas or dust (Lianou et al., 2016), and their stellar populations have been evolving passively for over 10 billion years. The physical mechanisms that led to the termination of star formation in these galaxies and depletion of their interstellar medium remain largely conjectural. In particular, there are currently no direct measurements of the amount of residual gas that might be still present in newly quiescent spheroids at high redshift (Sargent et al., 2015). Here we show that quiescent ETGs at z ~ 1.8, close to their epoch of quenching, contained 2 – 3 orders of magnitude more dust at fixed stellar mass than local ETGs. This implies the presence

Figure 1: Mid-infrared to radio SED of 24 μm-undetected pBzK+UVJp galaxies, from stacked cutout images (filled circles, the arrows representing 3σ upper limits), with best-fit model from Draine & Li (2007, solid red curve extending to the radio regime; Methods). For comparison, the "best-fit" standard MS template (Magdis et al., 2012), which has hotter dust, is shown in blue. Both models have been broadened using the redshift distribution of the sample as kernel. The error bars on the MIR, FIR, and radio fluxes show the bootstrap uncertainties derived from the stack.


24 μm
100 μm
160 μm
250 μm
350 μm
500 μm
850 μm
1.1 mm
20 cm

Сложили почти 1000 галактик!

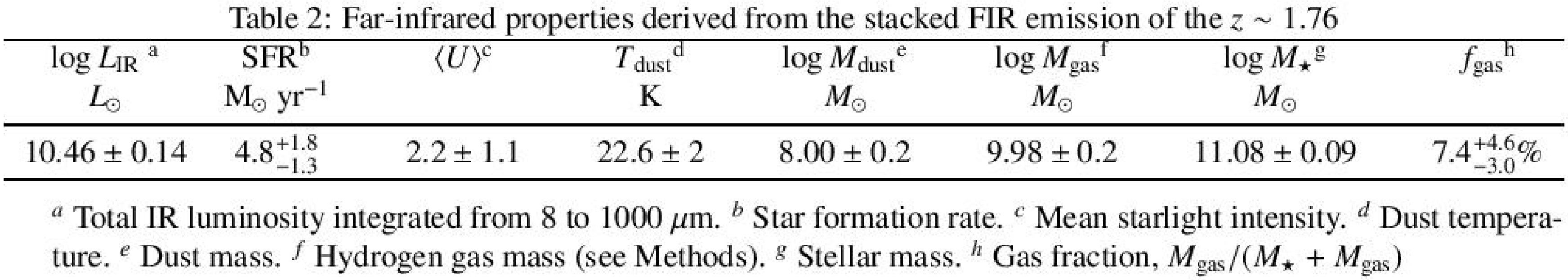
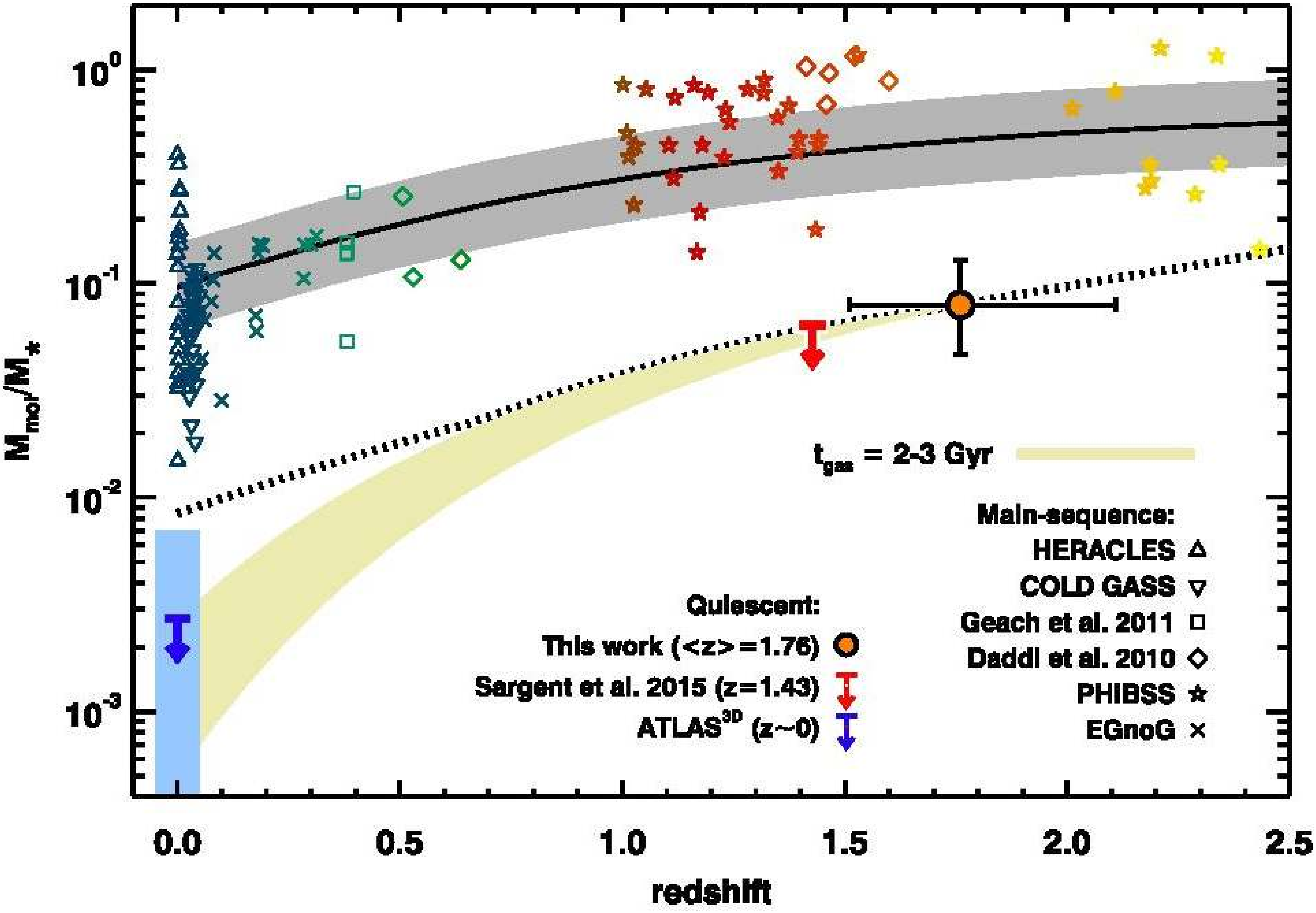


Table 2: Far-infrared properties derived from the stacked FIR emission of the $z \sim 1.76$

$\log L_{\rm IR}$ [a] $L_\odot$	SFR[b] $M_\odot$ yr^{-1}	$\langle U \rangle$[c]	$T_{\rm dust}$[d] K	$\log M_{\rm dust}$[e] $M_\odot$	$\log M_{\rm gas}$[f] $M_\odot$	$\log M_\star$[g] $M_\odot$	$f_{\rm gas}$[h]
10.46 ± 0.14	$4.8^{+1.8}_{-1.3}$	2.2 ± 1.1	22.6 ± 2	8.00 ± 0.2	9.98 ± 0.2	11.08 ± 0.09	$7.4^{+4.6}_{-3.0}\%$

[a] Total IR luminosity integrated from 8 to 1000 μm. [b] Star formation rate. [c] Mean starlight intensity. [d] Dust temperature. [e] Dust mass. [f] Hydrogen gas mass (see Methods). [g] Stellar mass. [h] Gas fraction, $M_{\rm gas}/(M_\star + M_{\rm gas})$



M_{mol}/M_*
10^0
10^{-1}
10^{-2}
10^{-3}
0.0
0.5
1.0
1.5
2.0
2.5
redshift
t_{gas} = 2-3 Gyr
Main-sequence:
HERACLES △
COLD GASS ▽
Geach et al. 2011 □
Daddi et al. 2010 ◇
PHIBSS ★
EGnoG ×
Quiescent:
This work (<z>=1.76) ●
Sargent et al. 2015 (z=1.43)
ATLAS^{3D} (z~0)

Эффективность звездообразования пониженная, но газа по массе – 10% от звезд