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От Сильченко О.К.

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A Photometrically and Spectroscopically Confirmed Population of Passive Spiral Galaxies

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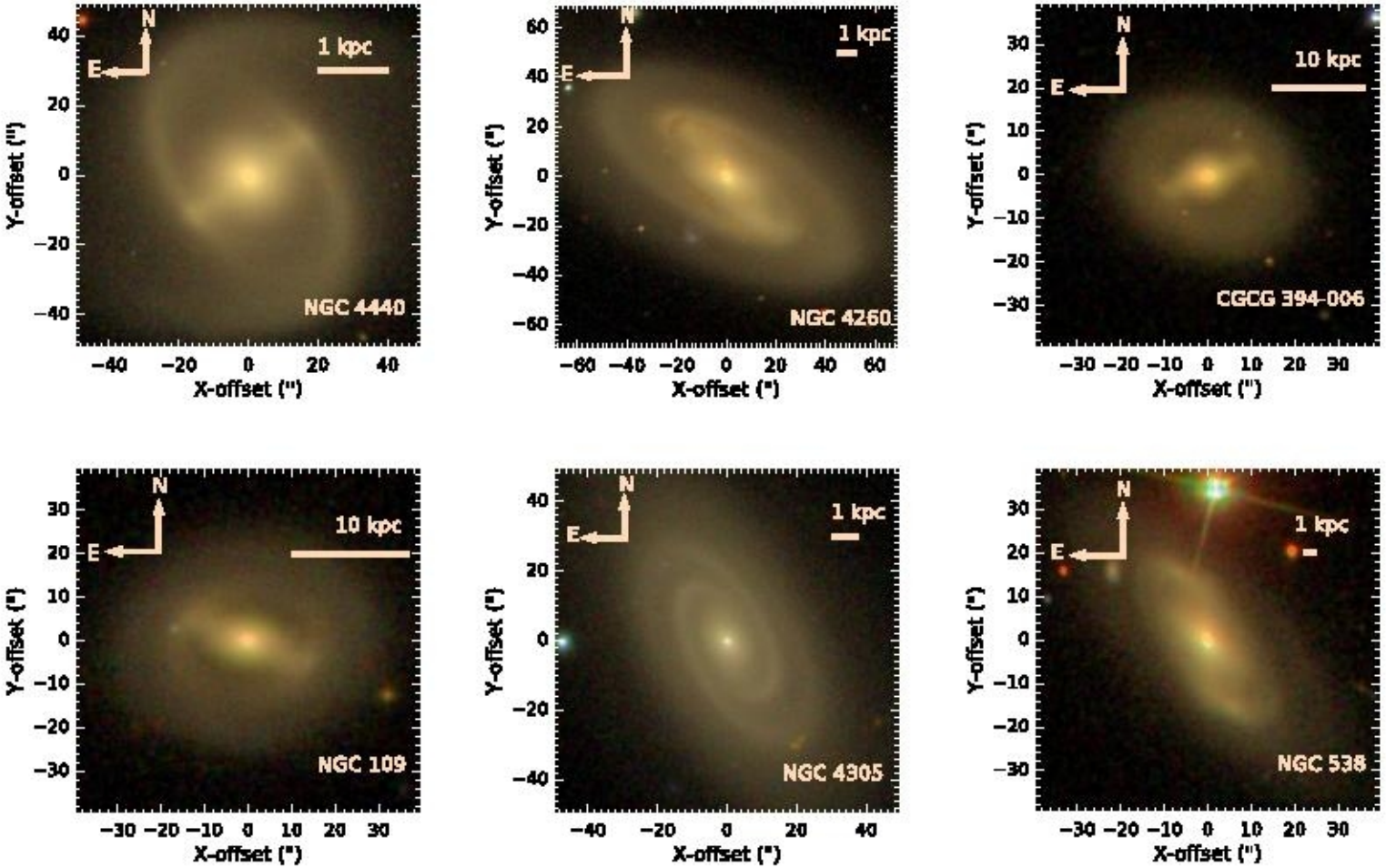
Sample

There are a total of 51 galaxies in the photometric sample in the range $0.002 < z < 0.035$, with r-band magnitudes $14.14 < r < 11.42$, average stellar mass $5 \times 10^{10} \mathrm{M}\odot$, and SDSS, *WISE*, and frequently GALEX photometry. The spectroscopic sample have mean $z = 0.02$, median stellar mass of $5.3 \times 10^{10} \mathrm{M}\odot$ and an average SDSS exponential fit radius of $12''$. The declinations of these six galaxies prevent them from all having SDSS or GALEX coverage.

Примеры изображений из SDSS



Фотометрия

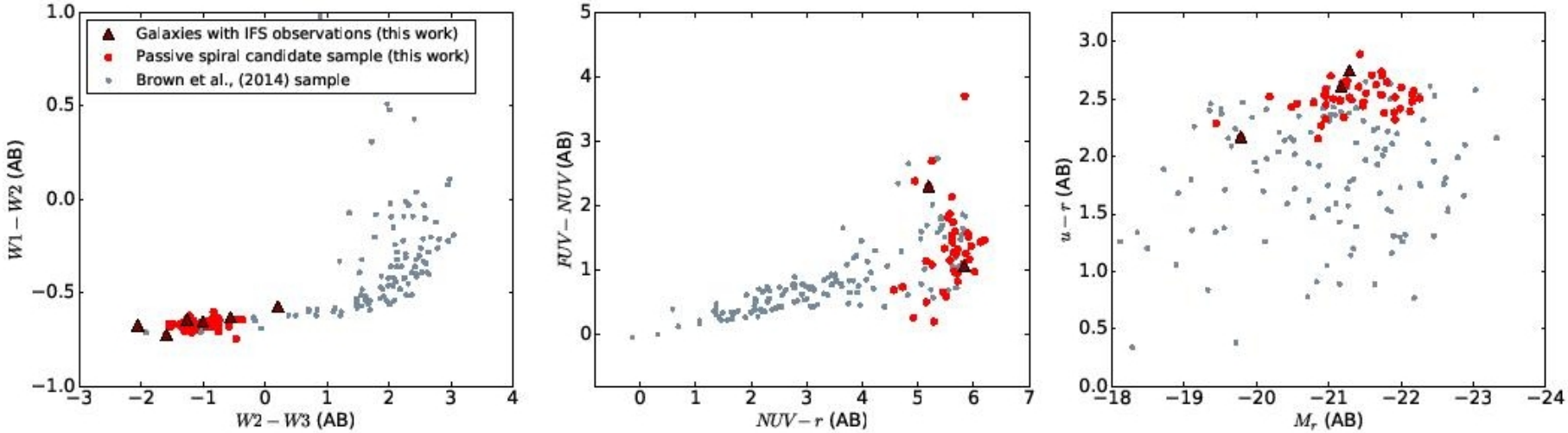


Figure 2. Colour-colour and colour-magnitude photometry plots of passive spiral galaxy candidates in the mid-IR, UV and optical, with the comparison galaxy sample of Brown et al. (2014). In all three panels, our sample lie in the regions usually occupied by passive elliptical galaxies.

Наблюдения

Observations were taken on 2015 December 15th-18th and 2016 March 11th-12th using the Wide Field Spectrograph (WiFeS; Dopita et al. 2007, 2010) on the Australian National University's 2.3m telescope at Siding Spring Observatory. The WiFeS IFS has a $25'' \times 38''$ field of view, which corresponds to $\sim 10 \times 16$ kpc at our mean redshift of $z \sim 0.02$, and $1'' \times 1''$ spaxels (if 2×1 binning is employed in the y-direction) provide $\sim$0.4 kpc spatial resolution. The B3000 ($\sim$3500-5800 Å) and R3000 ($\sim$5300-9000 Å) gratings were used along with the RT560 dichroic, resulting in a spectral resolution of $\sigma \sim 100$ km s^{-1} across the entire wavelength range. The instrument was used in nod-and-shuffle mode, with an average seeing of $1.8''$ throughout both runs. The data were reduced in the standard manner using the PyWiFeS reduction pipeline of Childress et al. (2014).

Спектральные результаты

Galaxy	RA (J2000)	Dec (J2000)	z	Obs Date	Exp Time (s)	D^1_{4000}	Age[2] (Gyr)
NGC 538	01:25:26.0	-01:33:02	0.0183	Dec 2015	3200	1.69	2.50
IC 375	04:31:03.1	-12:58:26	0.0351	Dec 2015	4800	1.67	2.40
MCG-02-12-043	04:35:11.1	-13:14:40	0.0353	Dec 2015	4500	1.54	1.43
CGCG 394-006	04:46:25.6	00:21:59	0.0233	Dec 2015	4200	1.80	3.25
NGC 4305	12:22:03.6	12:44:27	0.0063	Mar 2016	4500	1.50	1.02
NGC 4794	12:55:10.5	-12:36:30	0.0132	Mar 2016	2100	1.74	3.00

[1]Using the narrow D_{4000} definition of Balogh et al. (1999).

[2]Based on Bruzual & Charlot (2003) models with Solar metallicity and a Chabrier (2003) IMF.

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Size growth of red-sequence early-type galaxies in clusters in the last 10 Gyr⋆.

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ABSTRACT

We carried out a photometric and structural analysis in the rest-frame V band of a mass-selected ($\log M/M_\odot > 10.7$) sample of red-sequence galaxies in 14 galaxy clusters, 6 of which are at $z > 1.45$, namely JKCS041, IDCS J1426.5+3508, SpARCS104922.6+564032.5, SpARCSJ021524-034331, XDCPJ0044.0-2033, and SPT-CLJ2040-4451. To this end, we reduced/analyzed about 300 orbits of multicolor images taken with the Advanced Camera for Survey and the Wide Field Camera 3 on the Hubble Space Telescope. We uniformly morphologically classified galaxies from $z = 0.023$ to $z = 1.803$, and we homoge-

Пример далекого скопления

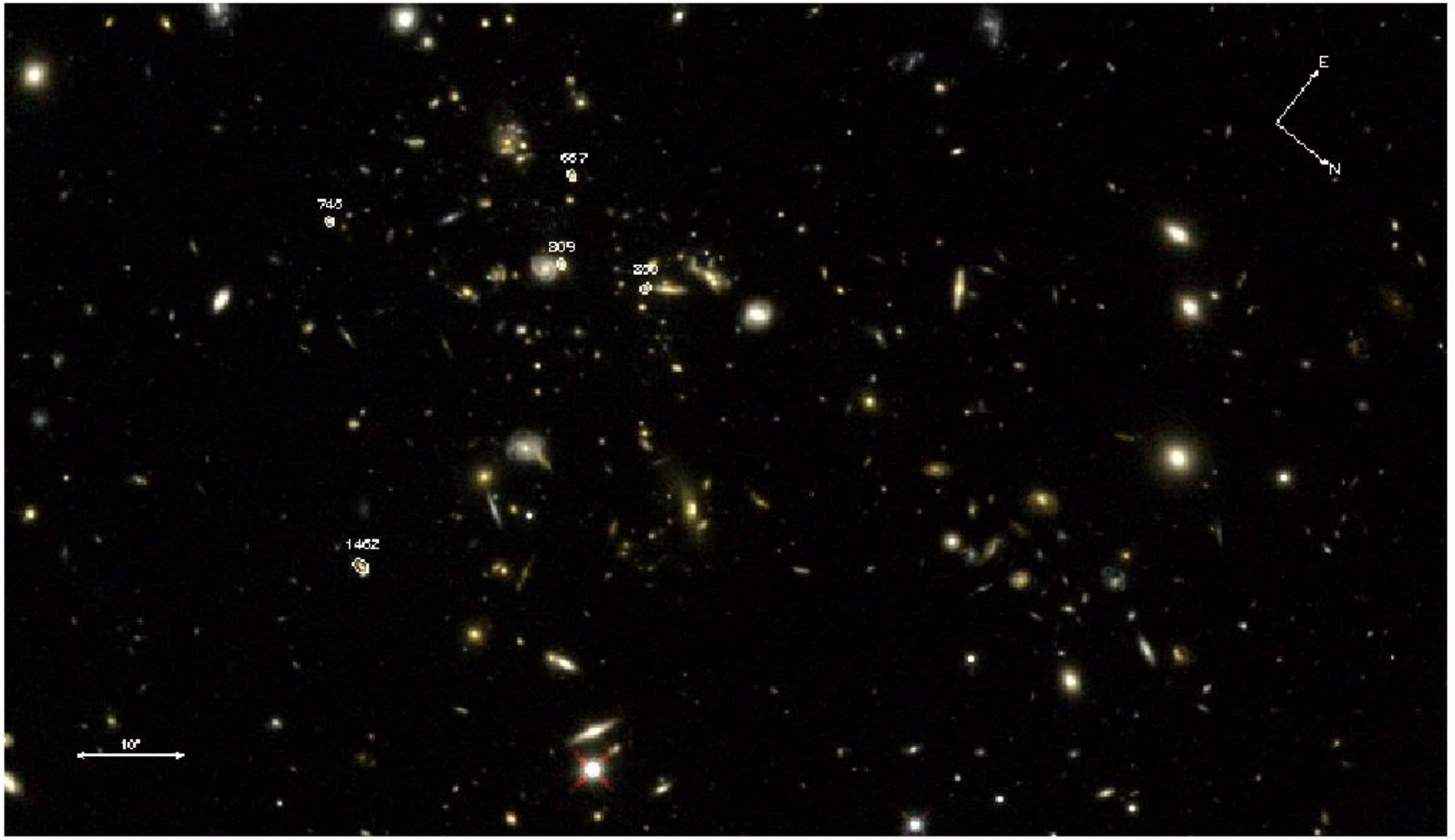


Fig. 4. Three color (F105W-F140W-F160W) image of the $z = 1.58$ XDCP J0044.0-2033 cluster. Red-sequence, early-type galax

Сравнение распределений размеров и масс

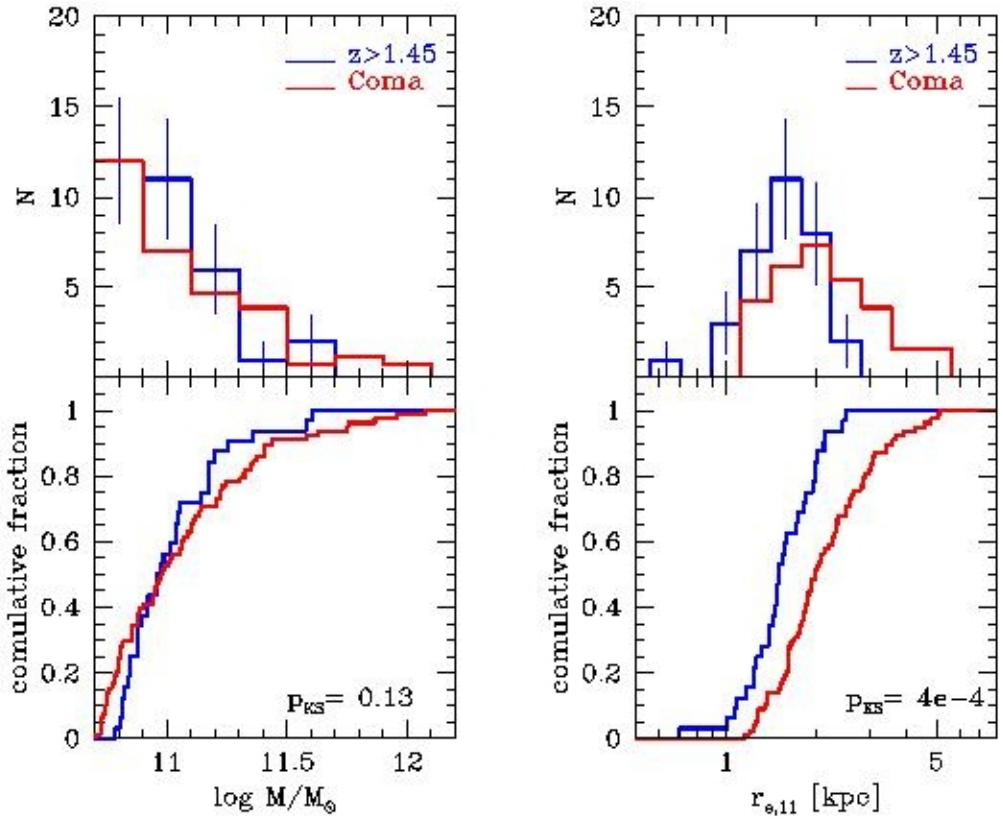


Fig. 11. Mass distribution (left) and size distribution (right) of $\log M/M_\odot > 10.7$ galaxies of high-redshift (blue) or Coma (red) cluster galaxies. Sizes are not corrected for PSF blurring effects. To account for the different richness of compared samples, we matched the number of galaxies with masses in the lowest mass bin. The outlier with smallest effective radius reduced to

Сравнение размеров галактик в скоплениях на разных z

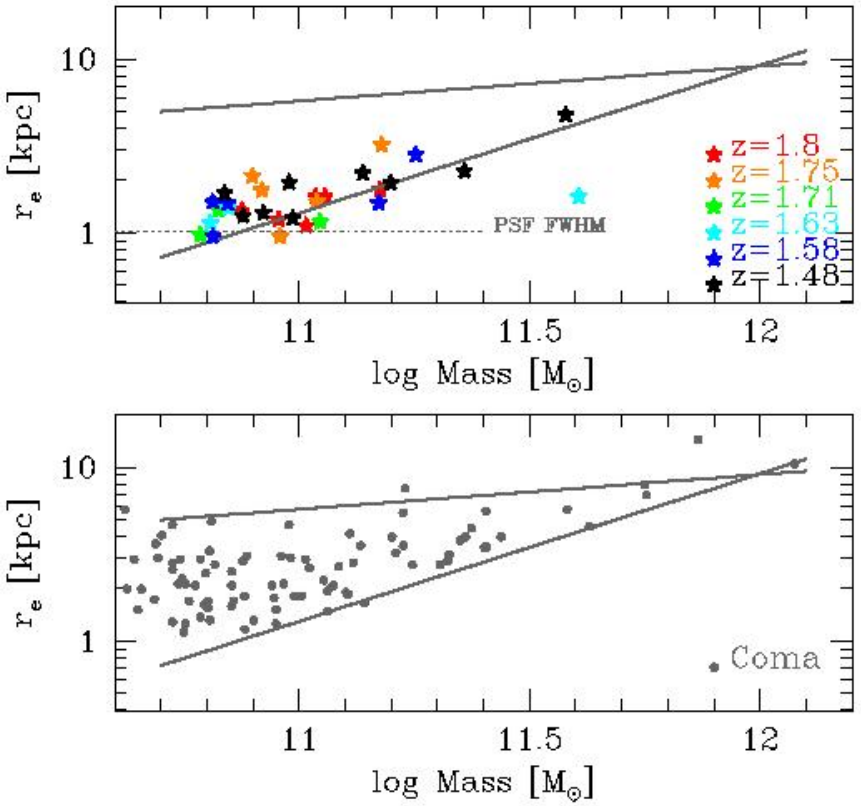
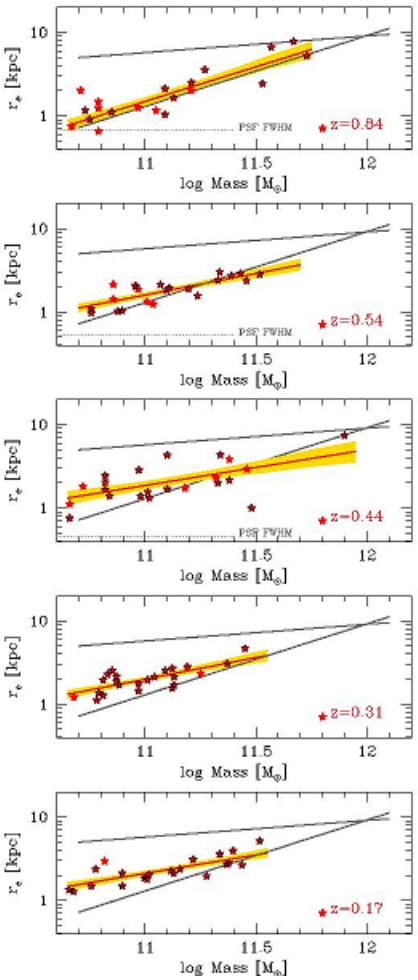


Fig. 10. Mass-size relation of red-sequence early-type cluster galaxies at $z > 1.47$ (points color-coded, upper panel) or Coma ($z = 0.00232$, bottom panel). Coma cluster galaxies occupy the wedge between the two slanted lines, reported in both panels.



Эволюция размеров галактик ранних типов в скоплении и в поле

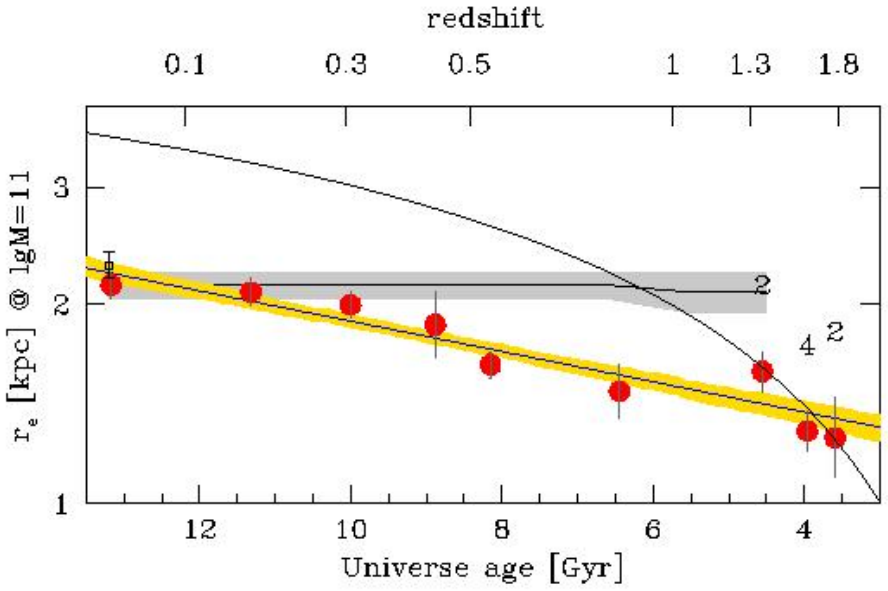


Fig. 14. Size at $\log M/M_\odot = 11$ vs redshift. The number above the points, when present, indicates the number of combined clusters. The solid line and shading show the fitted relation and its

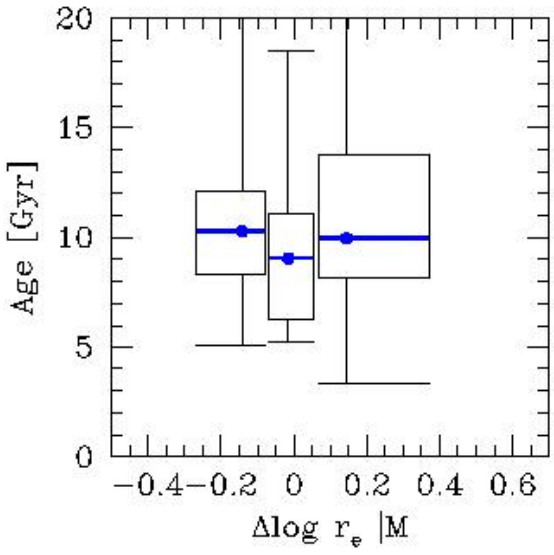


Fig. 15. Age distribution of Coma early-type galax
smaller/average/larger for their mass. The plot is a st
dard box-whisker: the vertical box width delimits the 1^{st}
3^{rd} quartile, while the median (2^{rd} quartile) is indicated by

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The mass-discrepancy acceleration relation in early-type galaxies: extended mass profiles and the phantom menace to MOND

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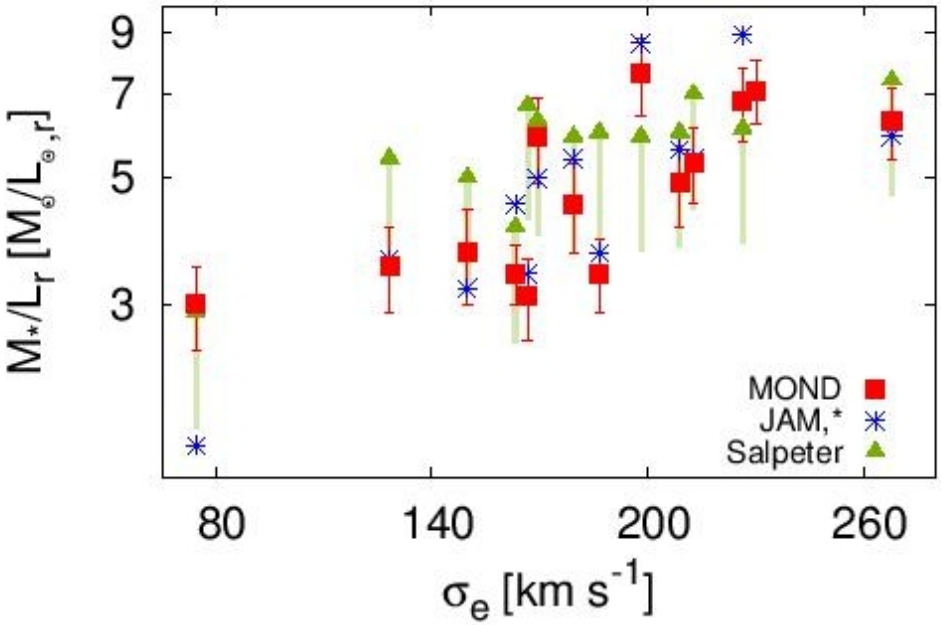

Figure 1. Comparison of stellar mass-to-light ratios. The red squares show the mass-to-light ratios from fits of the dynamical models to the observations assuming MOND ($(M/L)_{\rm MOND}$; see also Section 4). Blue stars indicate the stellar $(M/L)_{\rm JAM,*}$ obtained directly from JAM of ATLAS$^{\rm 3D}$ data (Cappellari et al. 2013b). The stellar population mass-to-light ratios from the same study, which assume a Salpeter IMF, are shown as green triangles, and the lines indicate a factor of 0.63 approximating the corresponding value for a Kroupa IMF. The various methods for calculating stellar mass-to-light ratios reproduce the same qualitative trend of stellar mass-to-light ratio with velocity dispersion σ_e.

MOND: спиральные против ранних

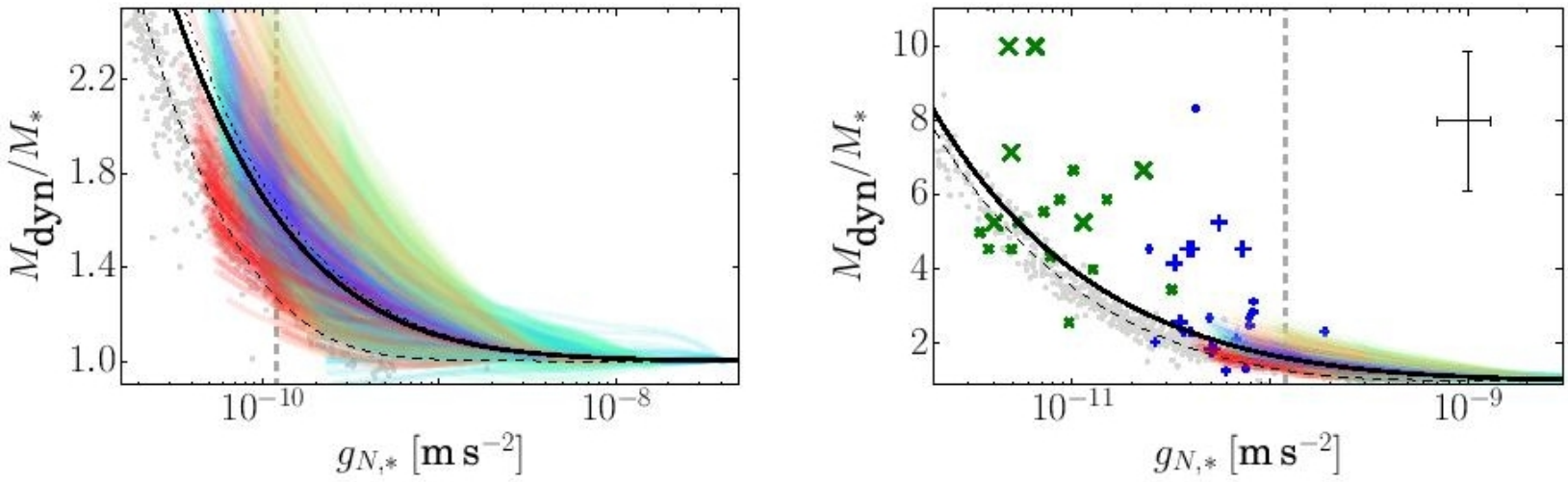

Figure 2. Mass discrepancy acceleration relation. *Left* panel: the dynamical-to-stellar mass ratio versus the acceleration caused by the stars (both quantities inferred through Newtonian dynamics). *Right* panel: MDA relation as in the other panel. Results based on GC system dynamics from Alabi et al. (2016) are shown as blue plus signs and and green crosses for values at $5R_{\rm e}$ and $R_{\rm max}$, respectively (see text), and larger symbols mark slow rotators. Typical error bars are indicated in the top right corner (these show random variations, while additional systematics of similar magnitude can be expected). For comparison, data for spiral galaxies from Famaey & McGaugh (2012) are included in both panels as grey points. The different colours of the lines denote the various galaxies,

MOND: В среднем – хорошо, в индивидуальных случаях - плохо