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От Сильченко О.К.

Astro-ph: 1801.09686

Origins of ultra-diffuse galaxies in the Coma cluster – I. Constraints from velocity phase-space

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Submitted to MNRAS; Accepted XXX. Received YYY; in original form ZZZ

ABSTRACT

We use Keck/DEIMOS spectroscopy to confirm the cluster membership of 16 ultra-diffuse galaxies (UDGs) in the Coma cluster, bringing the total number of spectroscopically confirmed UDGs to 24. We also identify a new cluster background UDG. In this pilot study of

Выборка

2.1 Sample Selection

We obtained spectroscopic data for a sample of Coma cluster low surface brightness (LSB) galaxies from the Subaru-LSB catalog of Y16 (see Figure 1 for a montage of our LSB sample). It should be noted that most of the LSB galaxies from Y16 fall short of the UDG definition in van Dokkum et al. (2015), i.e., $R_e > 1.5$ kpc and $\mu_0 > 24$ mag arcsec^{-2}, in the g band (equivalent to 23.5 mag arcsec^{-2} in the R-band). Therefore, we select 25 LSB galaxies from the Y16 catalog that maximize the number of unambiguous UDGs and simultaneously include targets from the core and outskirts regions of the cluster. Our sample has 6 targets in common with the van Dokkum et al. (2015) catalog: Yagi093 (DF26), Yagi276 (DF28), Yagi285 (DF25), Yagi364 (DF23), Yagi762 (DF36), and Yagi782 (DF32).

Выборка

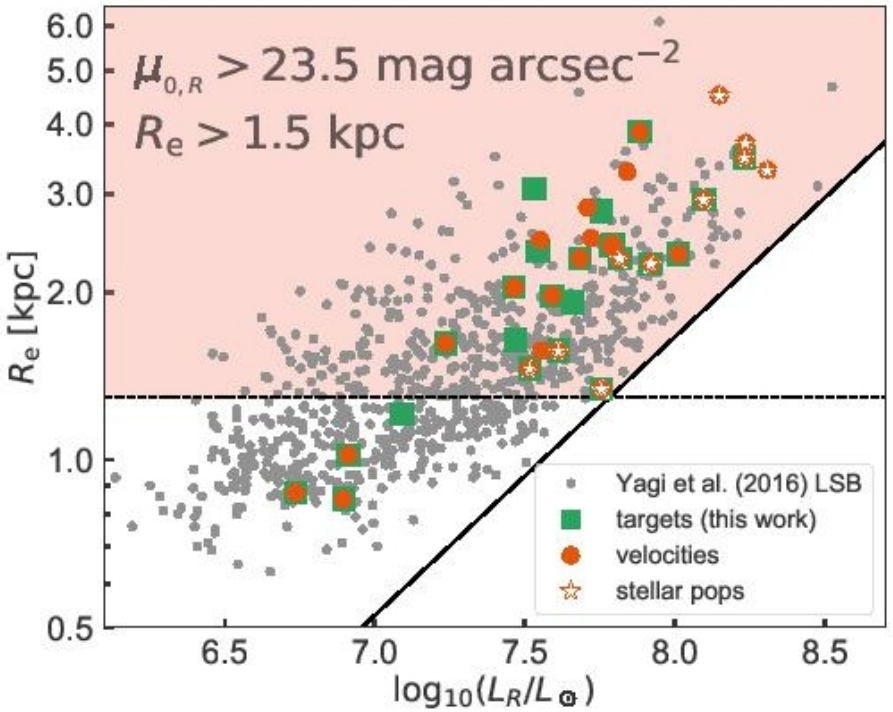


Figure 2. Size–luminosity diagram of our low surface brightness (LSB) spectroscopic galaxy sample. We have marked the 25 targets studied in this work (green squares), chosen from the Yagi et al. (2016) LSB catalog (gray dots). Galaxies with radial velocities from this work and in the literature as well as those with stellar population parameters from Férre-Mateu et al. (2018), submitted, and in the literature, have been marked as shown in the plot legend. The shaded region, defined by the dashed line, which corresponds to the $R_e > 1.5$ kpc criterion from van Dokkum et al. (2015), have

Примеры спектров

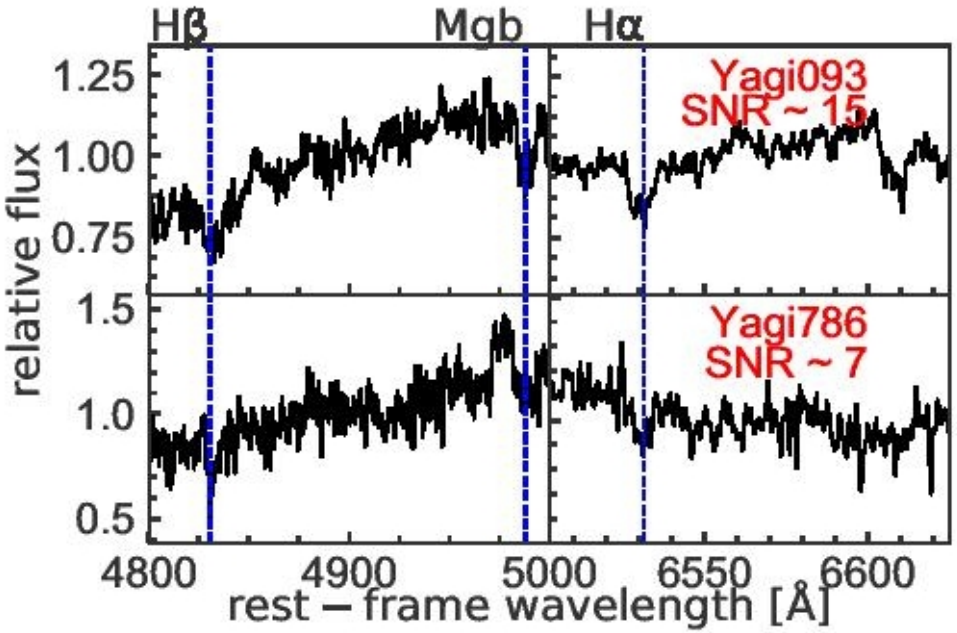
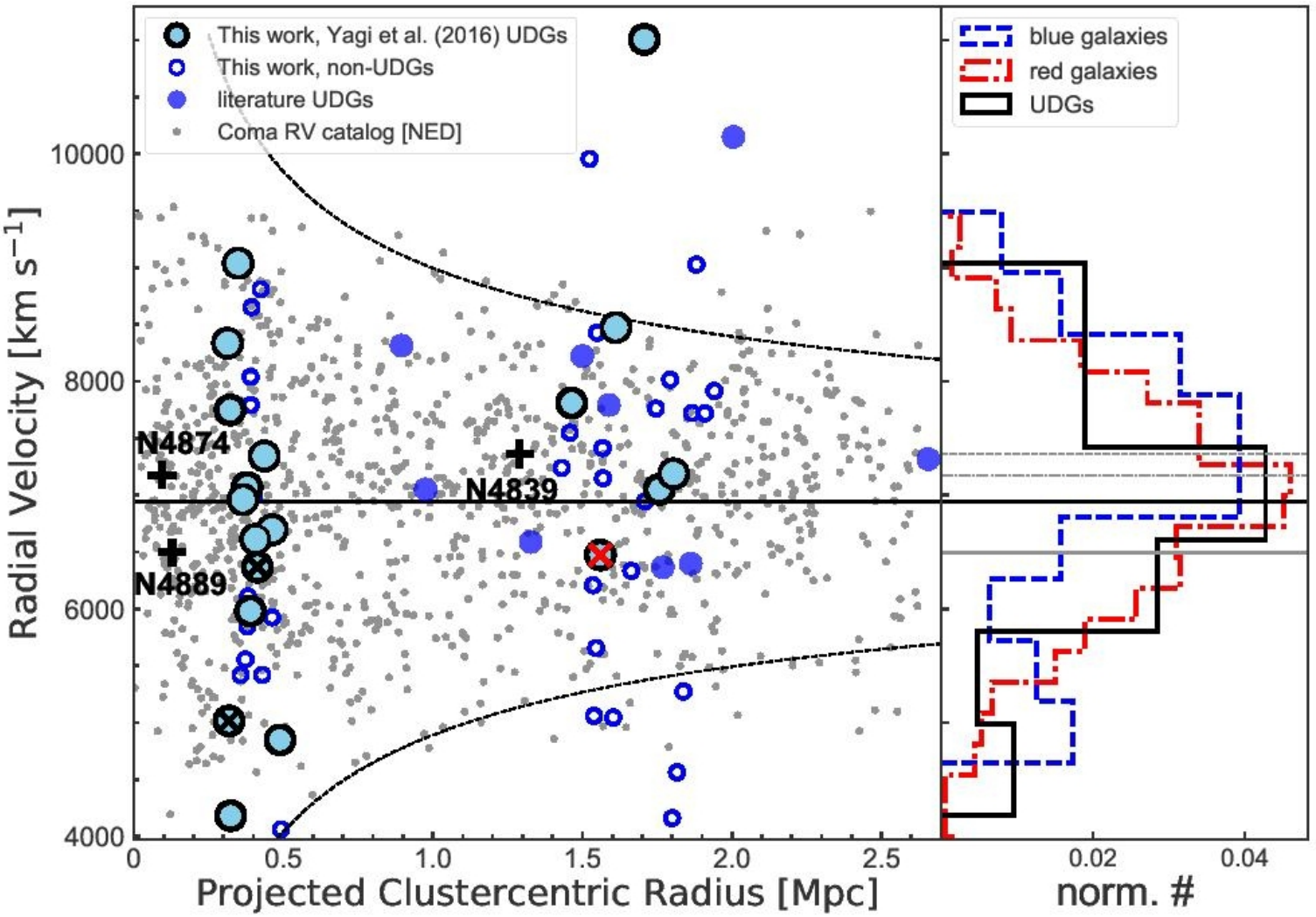
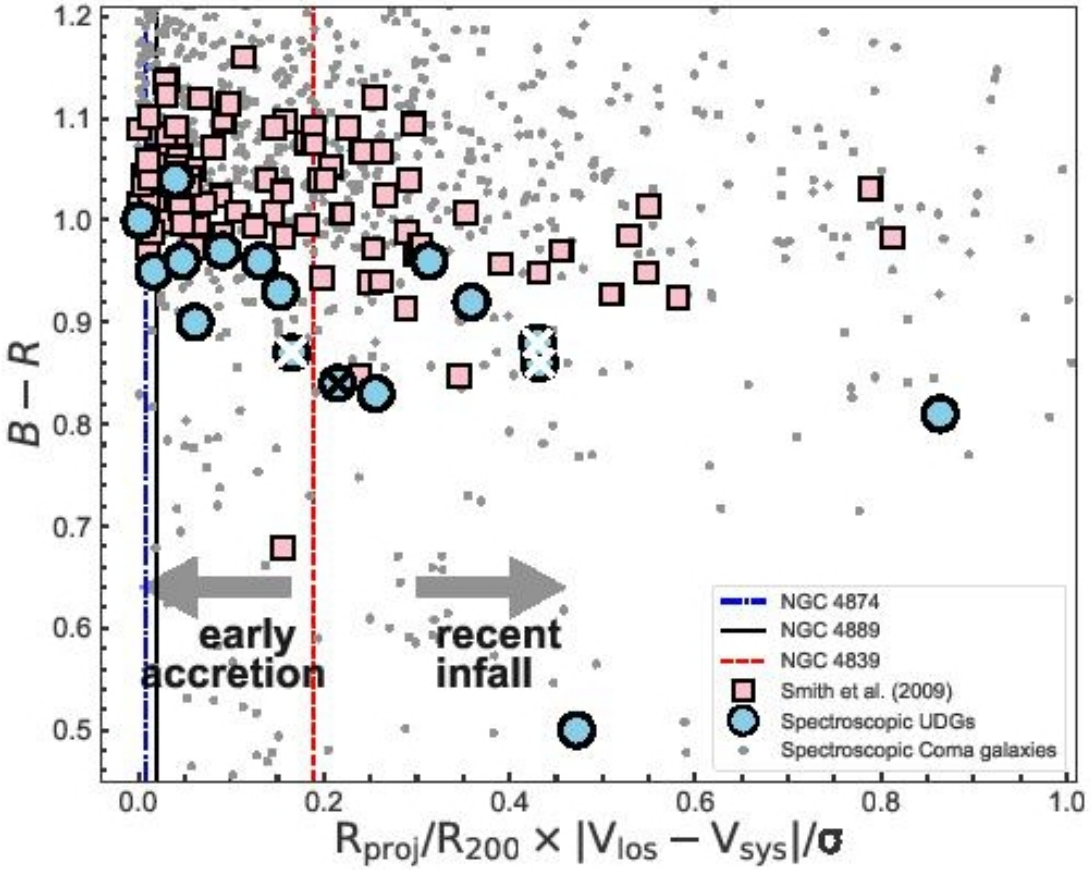


Figure 4. Rest-frame spectra of representative UDGs from the central and outer masks. In the *top* and *bottom* panels, we show the spectra of Yagi093 (central mask) and Yagi786 (outer mask), respectively, with the Hβ, Mgb and Hα spectral absorption features highlighted.

Динамика галактик в Coma



Две эпохи аккреции UDG?



Astro-ph: 1801.09695

Origins of ultra–diffuse galaxies in the Coma cluster – II. Constraints from their stellar populations

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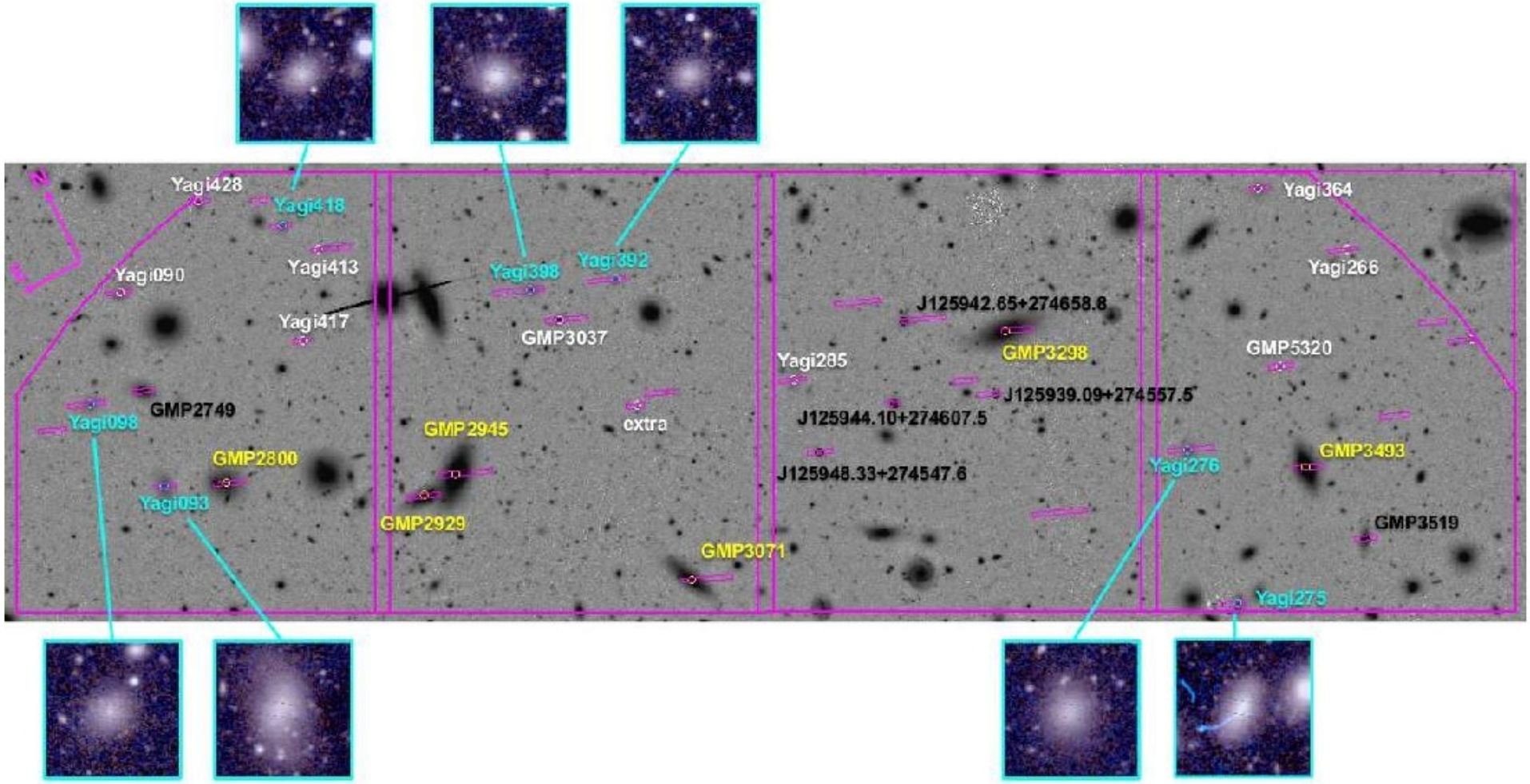
Submitted to MNRAS

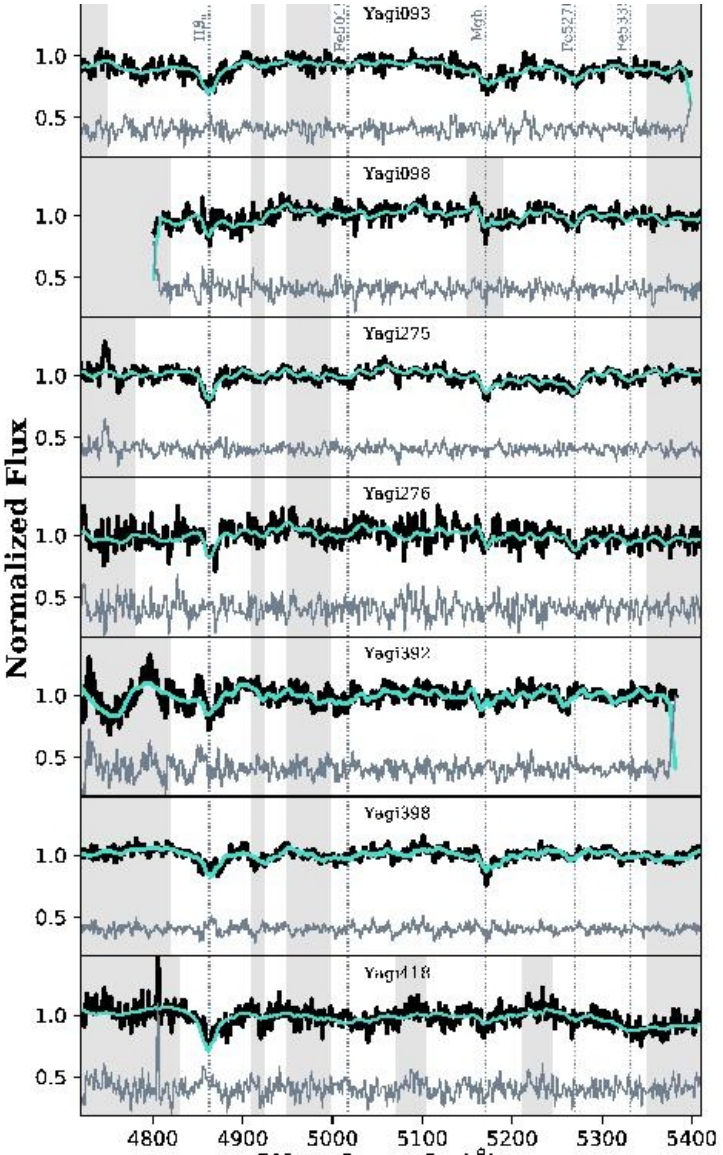
ABSTRACT

In this second paper of the series we study, with new Keck/DEIMOS spectra, the stellar populations of 7 spectroscopically confirmed ultra–diffuse galaxies (UDGs) in the Coma cluster. We find typically intermediate to old ages (~ 7 Gyr), low metallicities ([Z/H]~ -0.7 dex) and slightly super-solar abundance patterns ([Mg/Fe] $\sim +0.16$ dex). These properties are similar to those of dwarf galaxies inhabiting the same area in the

Расстановка щелей



Спектры


Yagi093
Yagi098
Yagi275
Yagi276
Yagi392
Yagi398
Yagi418
Normalized Flux
1.0
0.5
4800
4900
5000
5100
5200
5300
5400

Свойства звездного населения

	Method (age/[Z/H])	S/N	Age (Gyr)	[Fe/H] (dex)	[Z/H] (dex)	[Mg/Fe] (dex)	t_{50} (Gyr)	t_{90} (Gyr)	M_* ($M_\odot$)
Yagi 093	(3)	23	7.88± 1.76	-1.48± 0.82	-0.72± 0.18	0.64± 0.25	3.2	10.5	3.05E+08
Yagi 098	(3)	19	6.02± 2.56	–	-0.70± 0.18	–	3.3	10.6	1.07E+08
Yagi 275	(3)	25	4.63± 2.60	-0.06± 0.51	-0.37± 0.19	-0.42± 0.65	4.8	11.6	9.44E+07
Yagi 276	(3)	18	4.24± 2.32	–	-0.38± 0.71	–	5.3	11.9	1.41E+08
Yagi 392	(3)	15	7.30± 2.06	–	-0.39± 0.23	–	4.0	10.4	9.08E+07
Yagi 398	(3)	21	8.27± 3.14	-0.48± 0.87	-0.92± 0.38	0.06± 0.68	3.0	10.6	3.64E+07
Yagi 418	(3)	18	9.69± 2.02	-1.48± 0.96	-1.10± 0.95	0.27± 0.53	2.2	9.4	1.24E+08
Median UDGs			7.32± 2.32	-0.98± 0.84	-0.72± 0.25	0.16± 0.59	3.7	10.9	1.1E+08

Потом сравнивают с другими карликами,
проанализированными с другими моделями!

Место UDG в эволюции скопления?

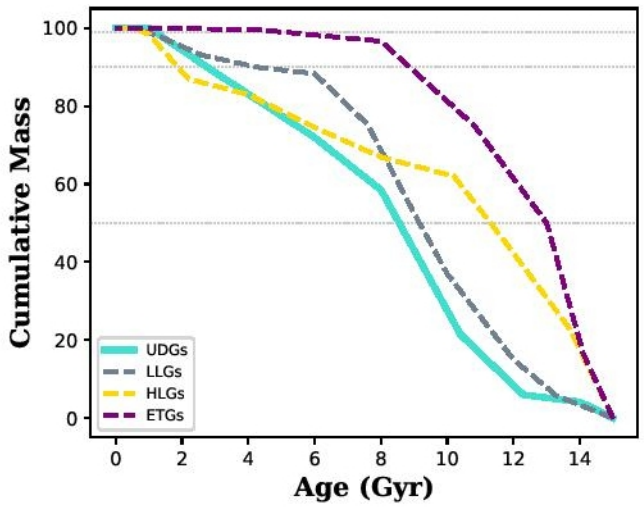
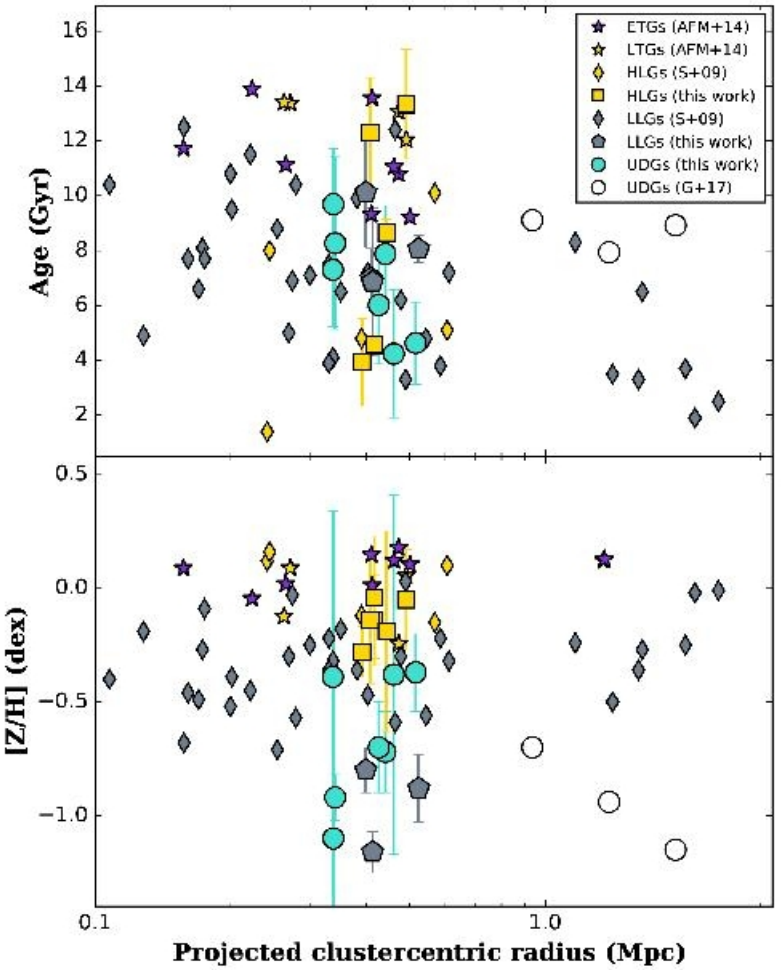
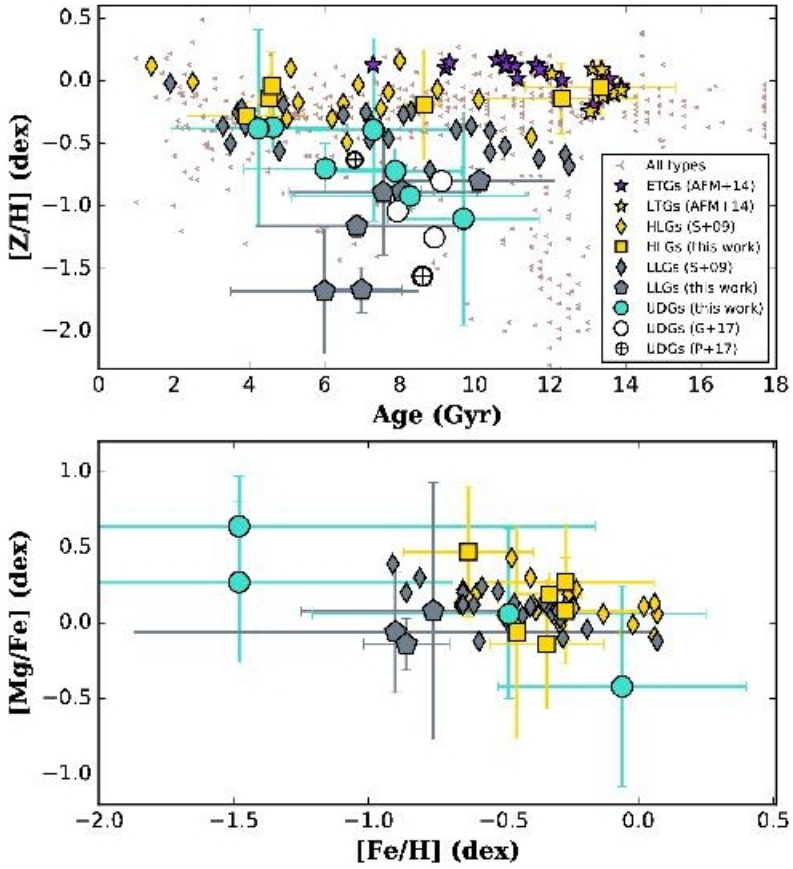
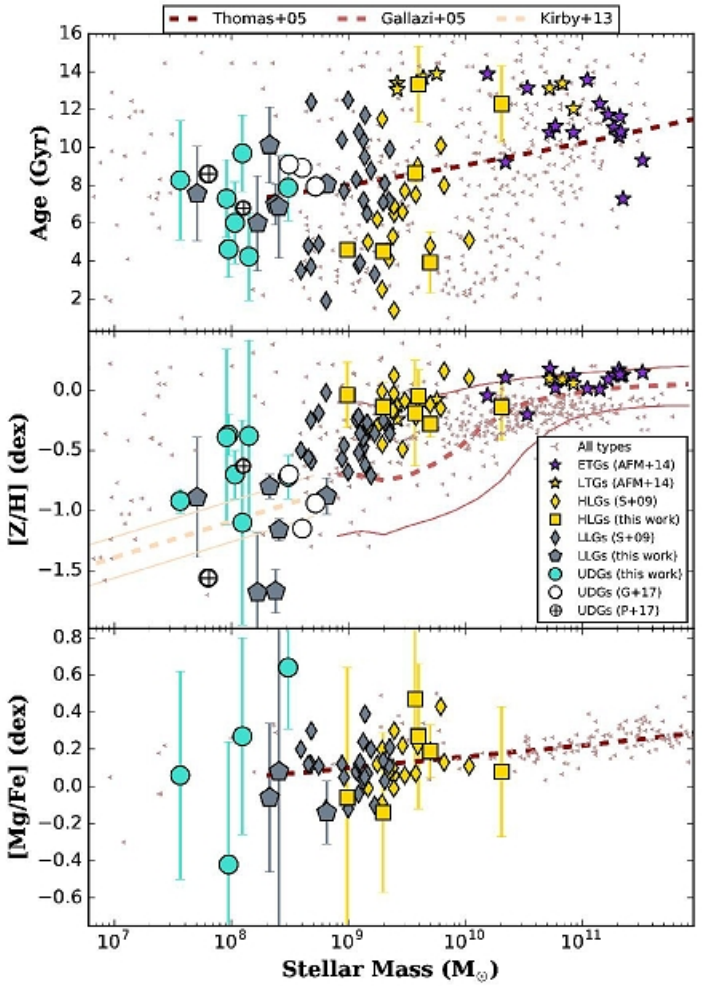


Figure 6. Mass assembly of Coma galaxies. The averaged SFHs for the different galaxy classes in Coma are translated into the cumulative stellar mass, to show the different formation timescales the galaxies undergo. Therefore the three horizontal dotted lines mark the creation of 50%, 90% and 99% of stellar mass. Our UDGs (cyan continuous line) present steady and extended SFHs, with late formation epochs and not quenching until ~3 Gyr ago. The LLGs in the mask (grey dashed line) seem to follow the UDGs timescales closely, albeit they quench ~2 Gyr earlier, compatible with the theoretical model of Rong et al. (2017).



Место UDG в эволюции скопления?





Astro-ph: 1801.09691

History and destiny of an emerging early-type galaxy

New IFU insights on the major-merger remnant NGC 7252

J. Weaver[1,2], B. Husemann[2], H. Kuntschner[3], I. Martín-Navarro[4,2], F. Bournaud[5], P.-A. Duc[6,5,7], E. Emsellem[3,8], D. Krajnović[9], M. Lyubenova[3], and R. M. McDermid[10,11]

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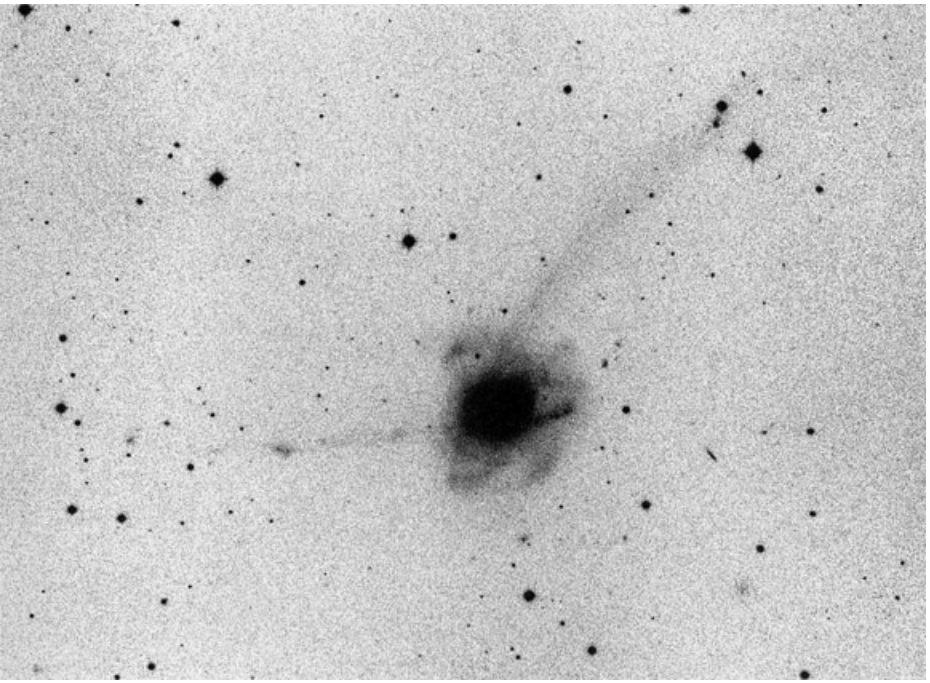
NGC 7252 – major merger



Четыре поля VIMOS

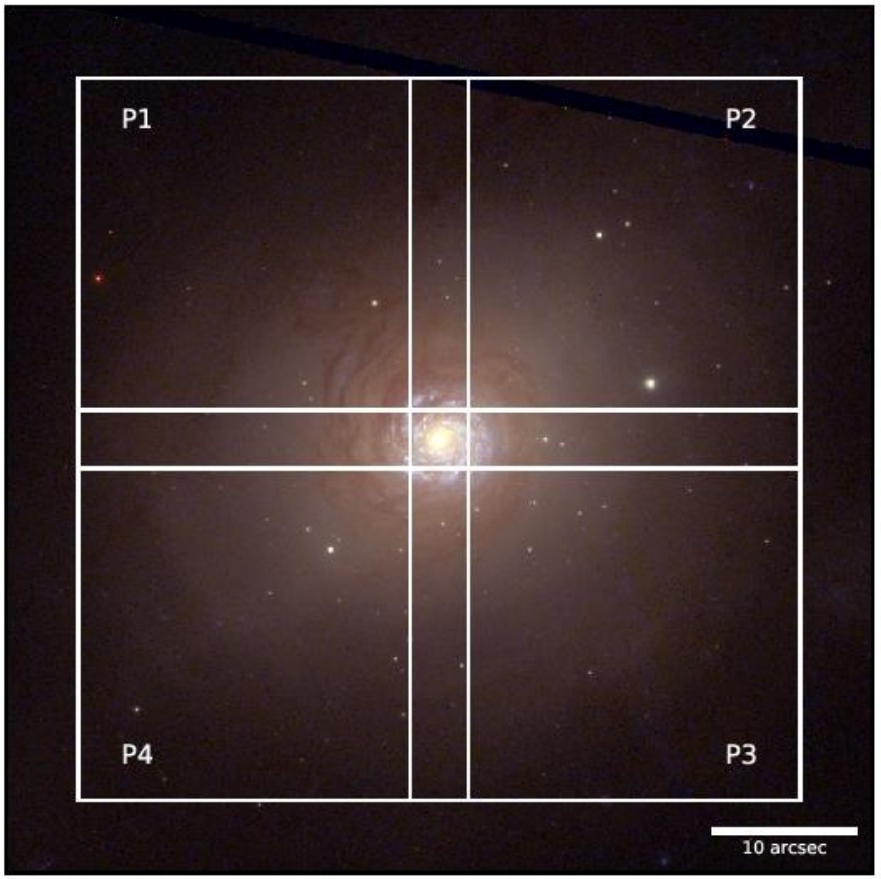
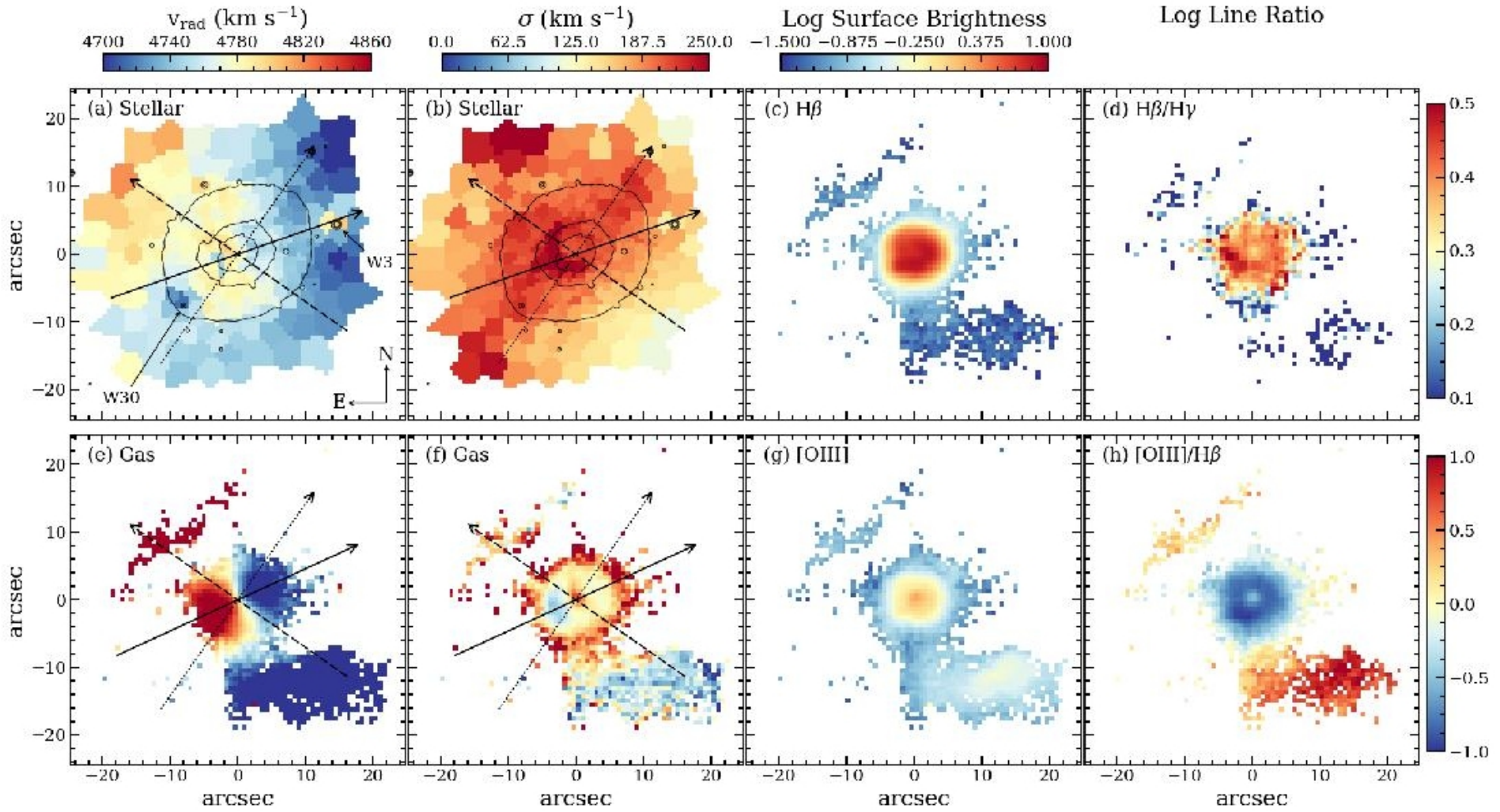


Fig. 1. Field-of-view of the four independent VIMOS pointings. A white box denotes each pointing, overlaid on a colour image of NGC 7252 taken with WFC3 aboard *Hubble* in the bands F336W, F475W and F775W (Bastian et al. 2013).

Результаты


v_{rad} (km s^{-1})
4700 4740 4780 4820 4860
σ (km s^{-1})
0.0 62.5 125.0 187.5 250.0
Log Surface Brightness
−1.500 −0.875 −0.250 0.375 1.000
Log Line Ratio
(a) Stellar
(b) Stellar
(c) Hβ
(d) Hβ/Hγ
(e) Gas
(f) Gas
(g) [OIII]
(h) [OIII]/Hβ
W3
W30
N
E
arcsec
arcsec
arcsec
arcsec
arcsec
arcsec
arcsec
arcsec

А она еще и быстрый ротатор!

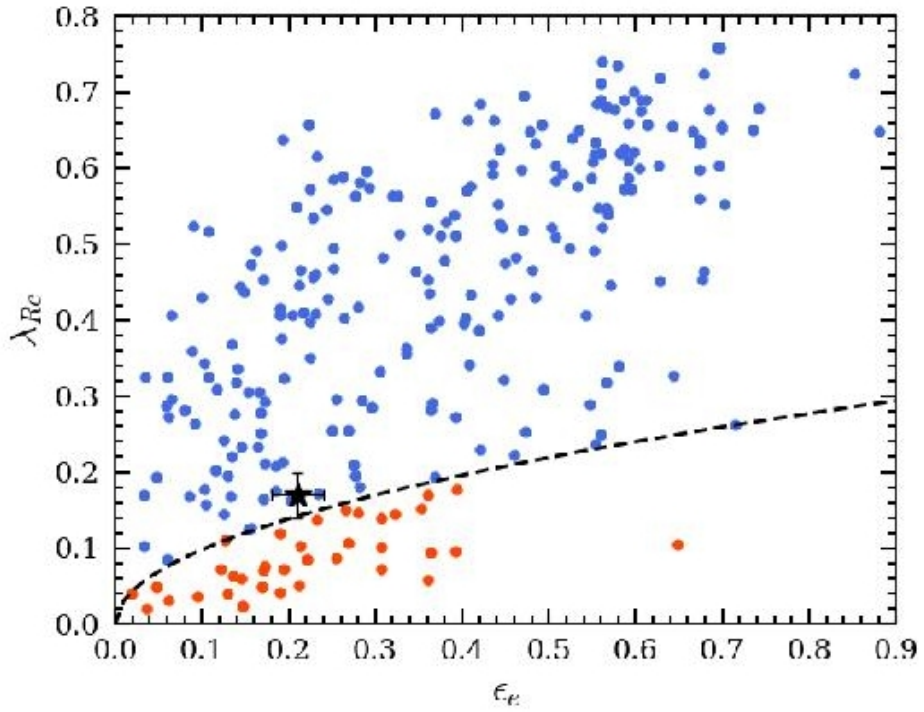


Fig. 5. Specific angular momentum $\lambda_{R_{\rm eff}}$ against ellipticity $\epsilon_{\rm eff}$. The measured value for NGC 7252 $\lambda_{R_{\rm eff}} = 0.17 \pm 0.03$ is shown as the black star and compared to the fast (blue) and slow (red) rotating early-type galaxies as obtained from the ATLAS^{3D} survey (Emsellem et al. 2011). The black dashed line represents the proposed dividing line $\lambda_{R_{\rm eff}} = 0.31\sqrt{\epsilon_{\rm eff}}$ proposed by Emsellem et al. (2011)

Необычный вид BPT-диаграммы

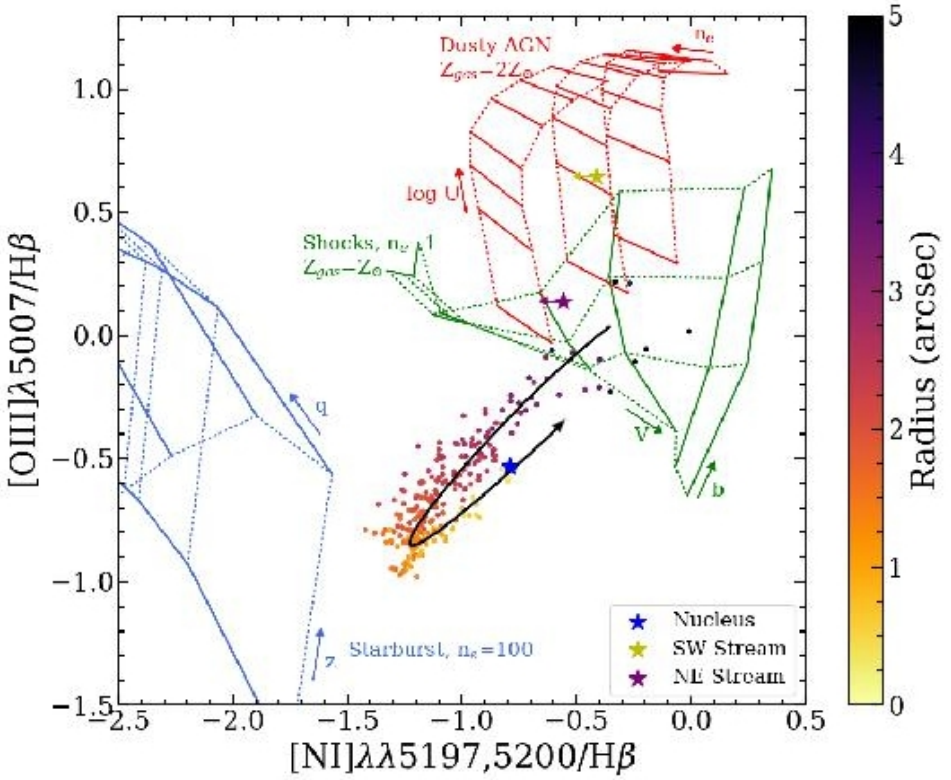


Fig. 6. Diagnostic diagram for the inner 5″ of NGC 7252. Each point corresponds to a pixel, coloured by radius from the centre of the star forming disc. We highlight the systematic trend of the changing-line ratios with decreasing radius by the curved black arrow. Due to low S/N, we are forced to co-add the outer SW and NE gas streams, and determine an upper limit on N I. For comparison we highlight model grids based on AGN photoionisation (red, Groves et al. 2004), shock ionisation (green, Allen et al. 2008), starburst photoionisation (blue, Levesque

Центральное кольцо

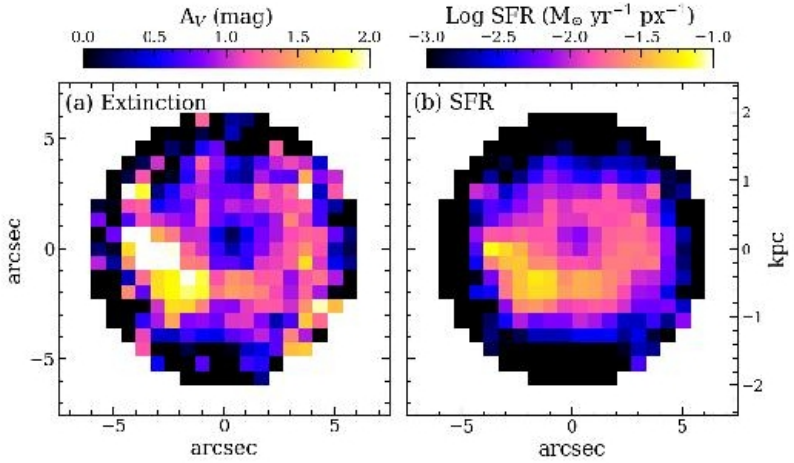


Fig. 7. Extinction and SFR maps of the central starburst derived from gas flux measurements with PyParadise. Left panel (a) shows the A_V extinction calculated from the observed Hβ/Hγ line ratios based on the Milky Way extinction law (Cardelli et al. 1989). Right panel (b) shows the estimated map of the SFR per pixel based on the extinction-corrected Hβ luminosity and the prescription of Calzetti (2013) after conversion to Hα luminosity. No signature of ongoing star formation have been identified outside of the central 12″ based on emission-line diagnostics.

- Суммарные темпы звездообразования в центре – около 2 масс Солнца в год

При таких темпах она достигнет красной последовательности через 5 млрд лет…

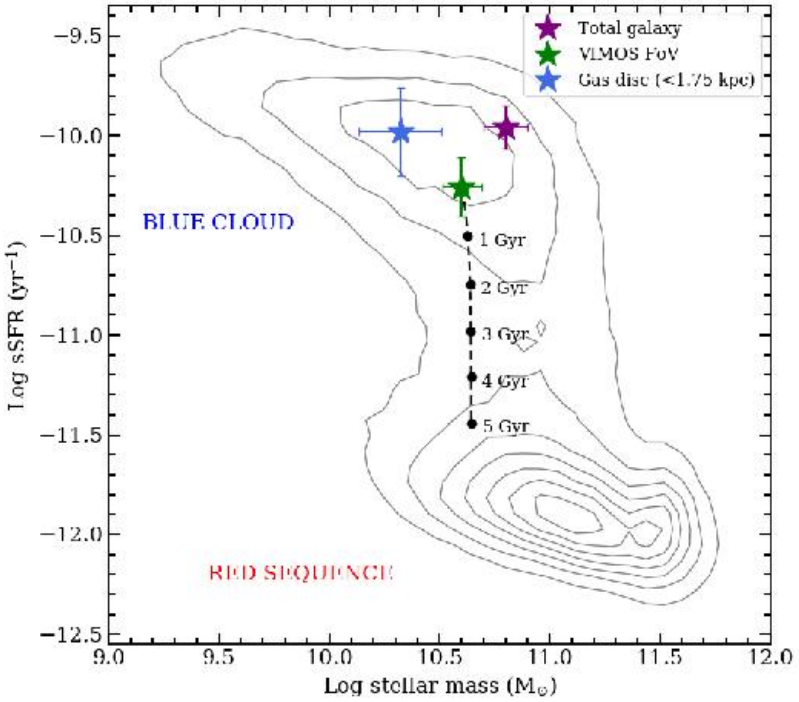


Fig. 8. Specific SFR (sSFR) against stellar mass for NGC 7252 corresponding to the total galaxy (purple), VIMOS field-of-view (green), and nuclear star forming disc (blue). The bimodal galaxy distribution from SDSS MPA-JHU catalog (Kauffmann et al. 2003; Brinchmann et al. 2004) is shown as contours for comparison. Assuming a constant depletion timescale of $t_{dep} = 1.9 \pm 0.6$ Gyr for NGC 7252 based on the molecular gas mass derived from CO(1-0) (Ueda et al. 2014) we pre-

Реконструкция истории звездообразования вдоль радиуса…

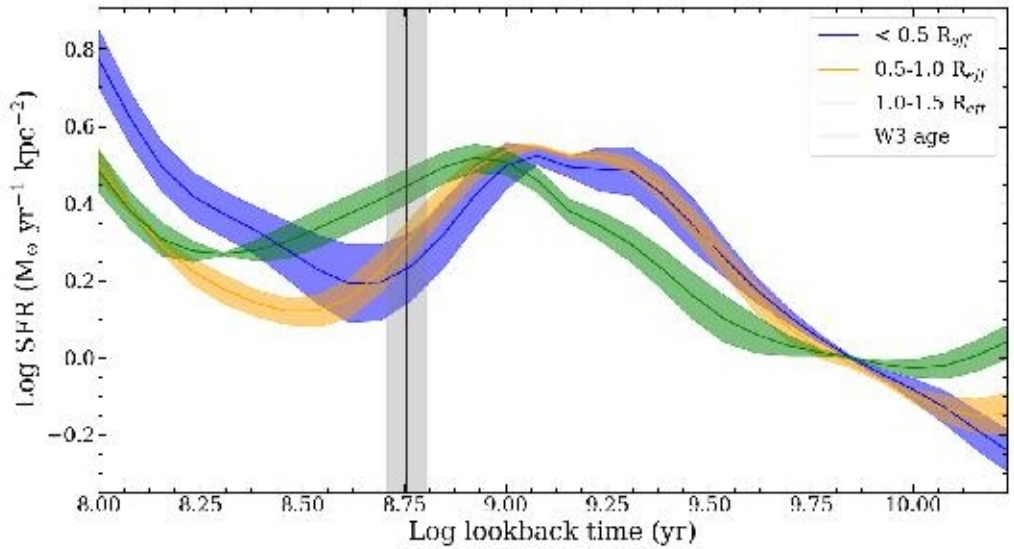


Fig. 10. Star formation histories binned by effective radius. Each curve is binned by 0.5 effective radius, with errors determined from the standard deviation within each spatial bin at a given age. The black vertical line indicates the age of the associated super star cluster W3 as reported by Cabrera-Ziri et al. (2016), with the uncertainty shown in grey.

Все-таки вспышка, из центра наружу

Astro-ph: 1802.00014

The MASSIVE Survey – X. Stellar Velocity Features and Misalignment between Kinematic and Photometric Axes in Massive Early-Type Galaxies

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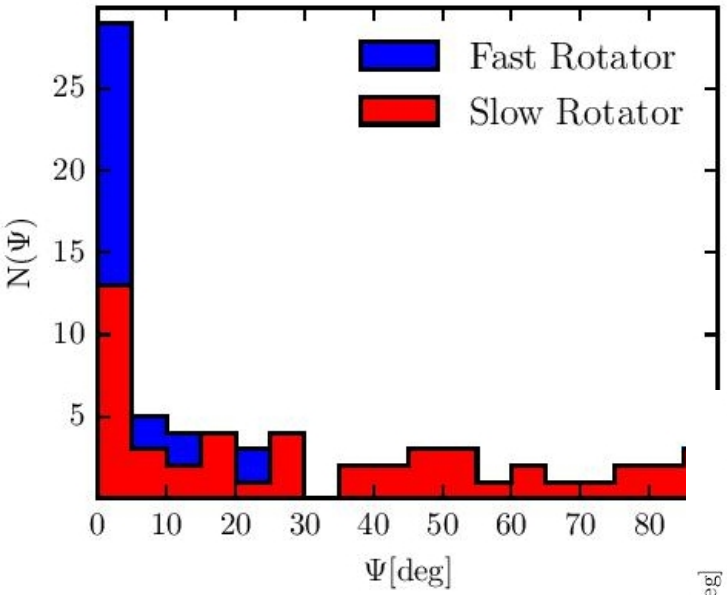
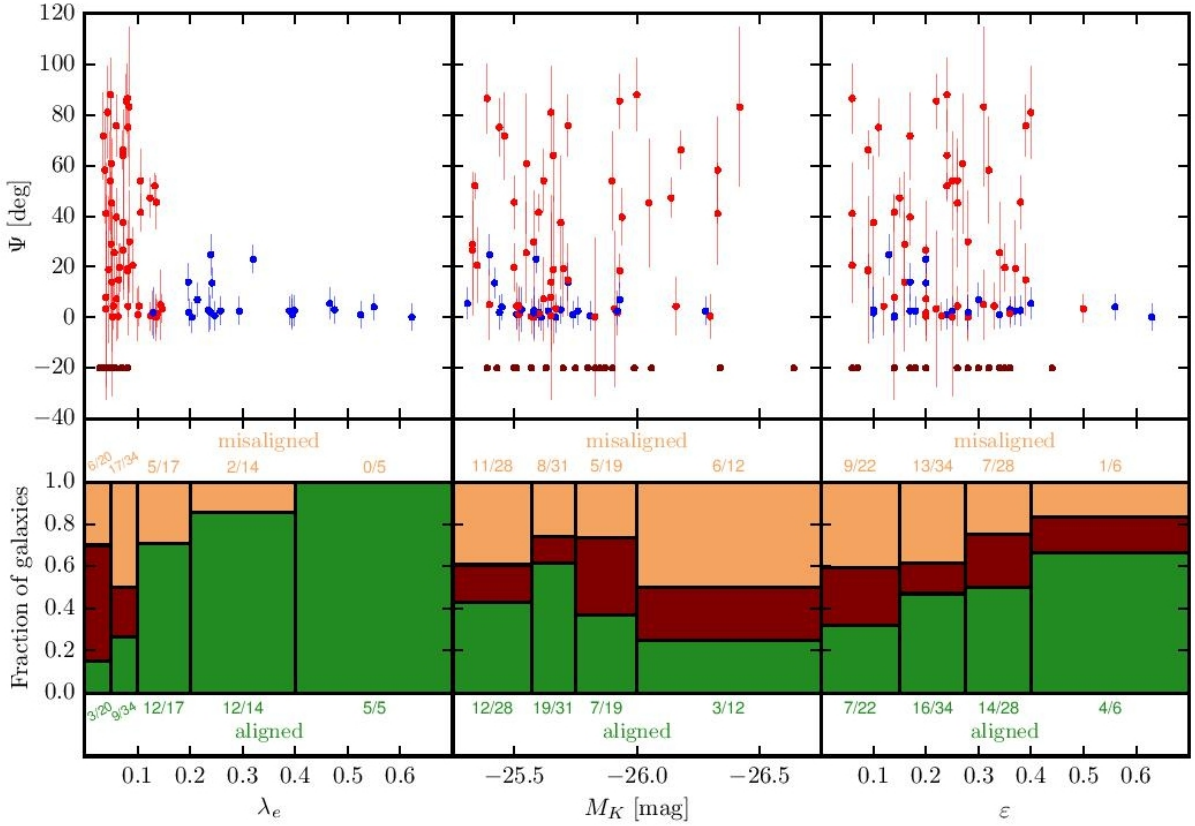
Accepted XXX. Received YYY; in original form ZZZ

ABSTRACT

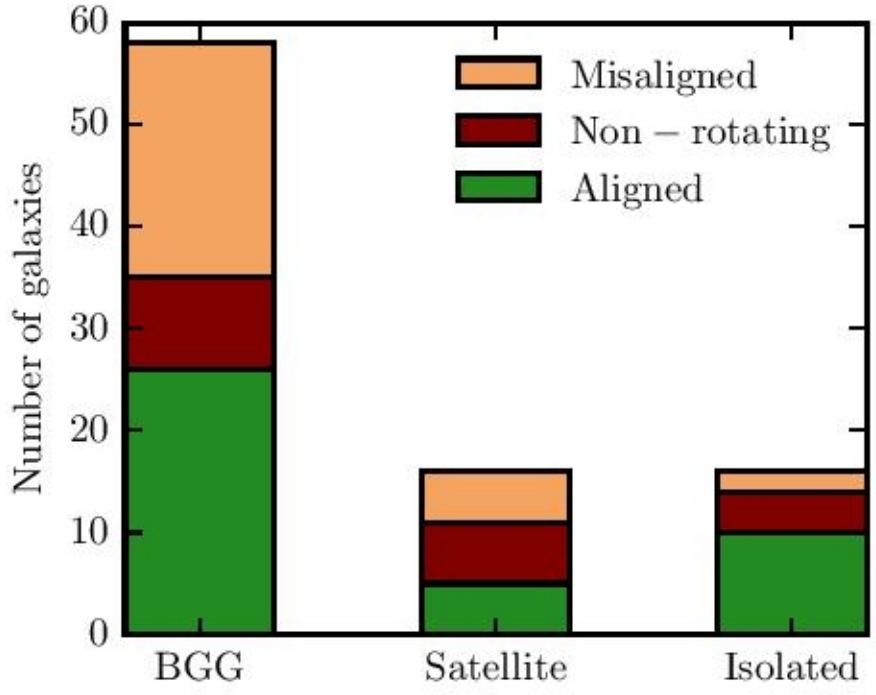
We use spatially resolved two-dimensional stellar velocity maps over a $107'' \times 107''$ field of view to investigate the kinematic features of 90 early-type galaxies above stellar mass $10^{11.5} M_\odot$ in the MASSIVE survey. We measure the misalignment angle Ψ between the

Рассогласование фотометрической и кинематической большой оси





Зависимость от окружения?



Astro-ph: 1802.00081

A whirling plane of satellite galaxies around Centaurus A challenges cold dark matter cosmology

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The Milky Way and Andromeda galaxy are each surrounded by a thin plane of satellite galaxies that may be corotating. Cosmological simulations predict that most satellite galaxy systems are close to isotropic with random motions,

Плоскость спутников вокруг Cen A

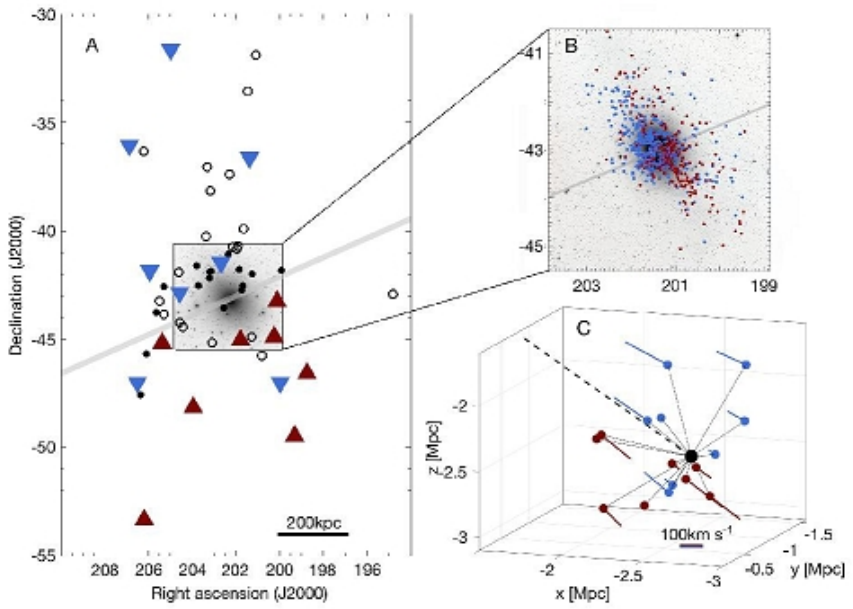

Figure 1: **On-sky and 3D distribution of the satellite system.** A: The on-sky distribution of the Cen A subgroup. The central image of Cen A has been scaled up by a factor of five to illustrate the features of the host galaxy. Blue downwards and red upwards pointing triangles show approaching and receding satellite galaxies with respect to Cen A velocity, respectively. Open circles are group member candidates, filled circles are confirmed satellites without velocity measurements. The line that optimally separates the approaching/receding satellites is indicated with the wide grey band; it coincides with the dust lane of Cen A. B: The kinematic distribution of 1239 planetary nebulae (*28*). Blue PNs are approaching, red PNs are receding relative to Cen A. C: 3D representation of the spatial distribution of the Cen A satellite galaxies in equatorial Cartesian coordinates (the Earth is at $x = y = z = 0$). The length of the colored lines is proportional to the observed velocity, the dashed line is our line of sight towards Cen A.

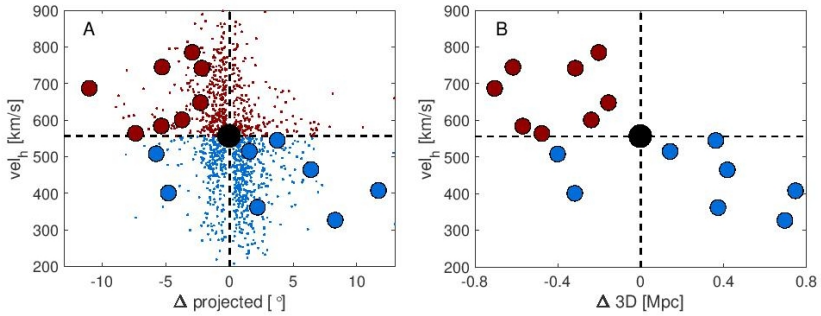

Figure 2: **Velocities and separations to Cen A.** Heliocentric velocities versus angular (A) and 3D (B) distances from Cen A (black dot), in the North (positive Δ) or South (negative Δ) of the dust lane. Large and small dots show, respectively, satellite galaxies and planetary nebulae. Blue and red colors indicate, respectively, approaching and receding objects with respect to the Cen A velocity. The angular distances of the PNs are scaled up by a factor of ten.