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От Сильченко О.К.

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SDSS-IV MaNGA: The Formation Sequence of S0 Galaxies

Amelia Fraser-McKelvie[1*], Alfonso Aragón-Salamanca[1], Michael Merrifield[1], Martha Tabor[1], Mariangela Bernardi[2], Niv Drory[3], Taniya Parikh[4], Maria Argudo-Fernández[5,6].

[1] *School of Physics & Astronomy, University of Nottingham, University Park, Nottingham, NG7 2RD, U.K.*
[2] *Department of Physics and Astronomy, University of Pennsylvania, Philadelphia, PA 19104, USA.*
[3] *McDonald Observatory, The University of Texas at Austin, 1 University Station, Austin, TX 78712, USA.*
[4] *Institute of Cosmology & Gravitation, University of Portsmouth, Dennis Sciama Building, Portsmouth, PO1 3FX, U.K.*
[5] *Centro de Astronomía, Universidad de Antofagasta, Avenida Angamos 601, Antofagasta 1270300, Chile.*
[6] *Chinese Academy of Sciences South America Center for Astronomy, China-Chile Joint Center for Astronomy, Camino El Observatorio, 1515, Las Condes, Santiago, Chile.*

MANGA! Разделение на балдж и диск по эфф. радиусу балджа

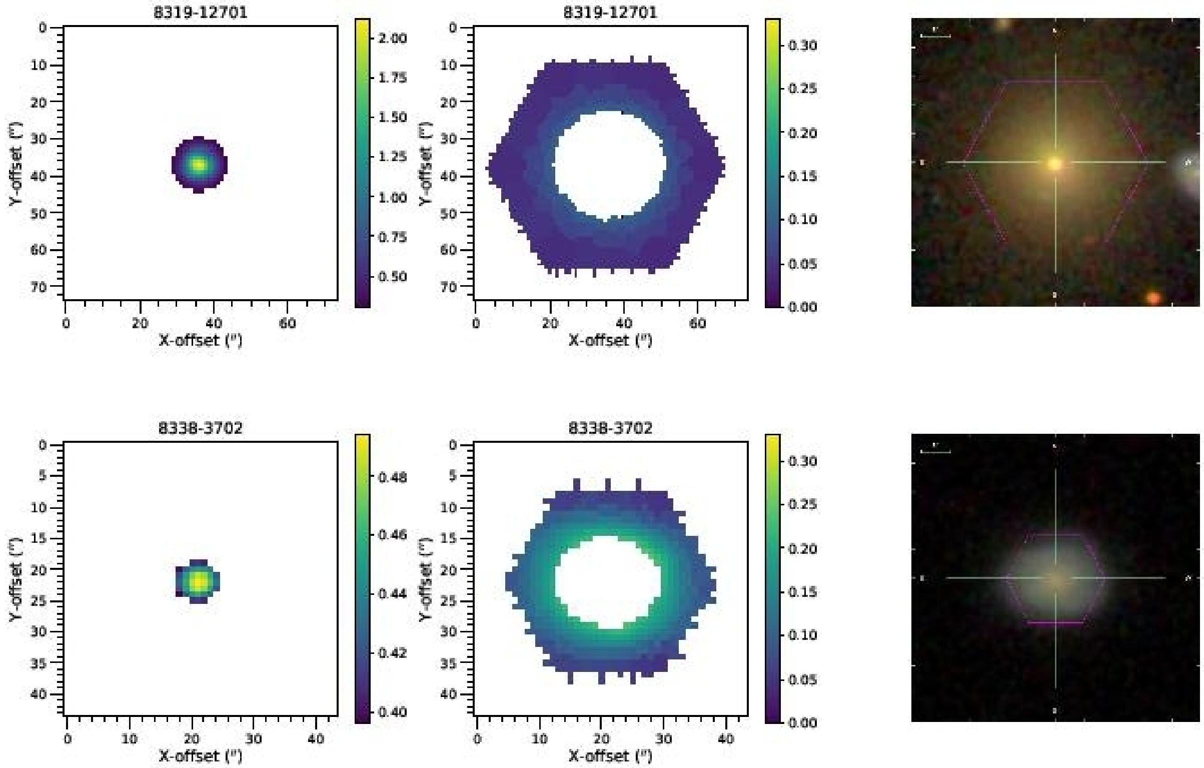
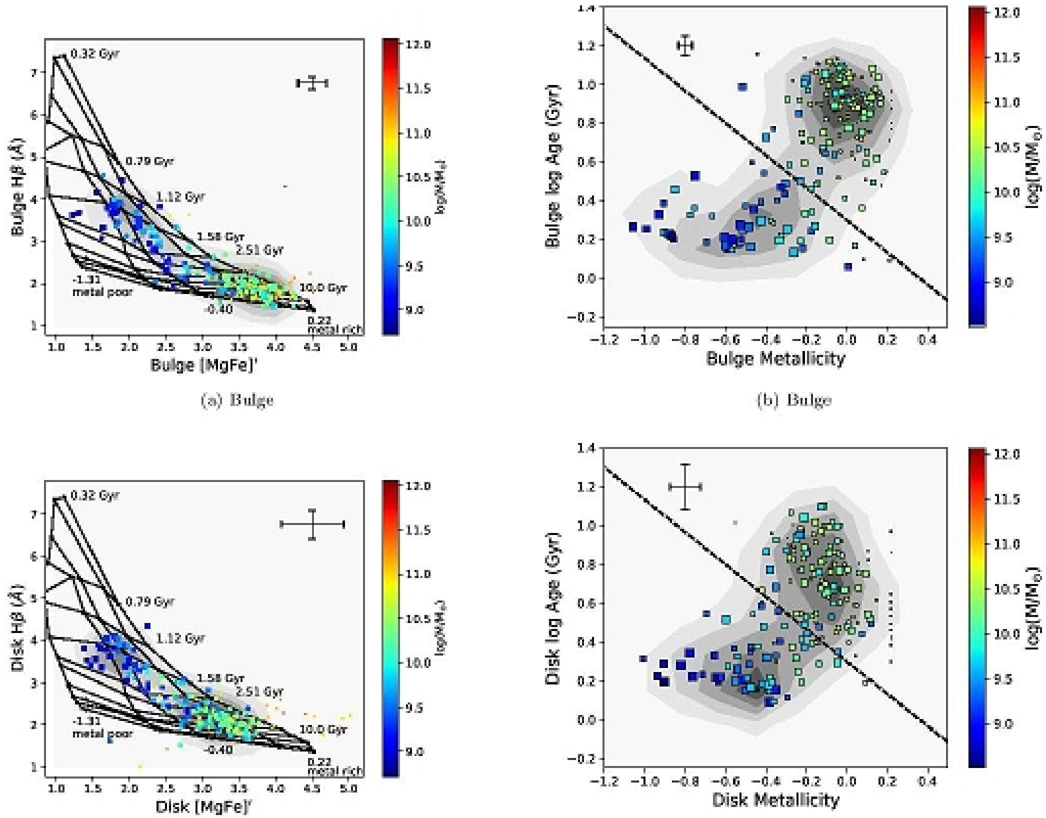


Figure 3. The bulge (left) and disk (centre) regions of two MaNGA lenticulars, 8319-12701 ($M_\star = 9.6 \times 10^{10}\ M_\odot$) and 8338-3702 ($M_\star = 1.6 \times 10^9\ M_\odot$). Bulge regions are defined as all spaxels within one R_b, and disk as spaxels outside $2R_b$. The bulge and disk regions are coloured by the relative flux contribution of each Voronoi bin to the total flux of the galaxy. The right shows the colour images of the galaxy with the hexagonal MaNGA field of view overlaid in pink.

И что-то балджи и диски похожи, как две капли воды!



(a) Bulge (b) Bulge

(c) Disk (d) Disk

Figure 5. Observables and their implied physical stellar ages and metallicities for the bulge (panels a and b) and disk (panels c and d) regions of MaNGA lenticulars. The index–index diagram for the bulge regions is shown in panel a, and disk regions in panel c, with SSP model predictions of Vazdekis et al. (2010) also overlaid. These model lines are bi-linearly interpolated between to obtain stellar age and metallicity estimates for the bulge (panel b) and disk (panel d) regions. An arbitrary dashed line separates the two regions of more metal-rich, older stellar populations from the metal-poor, younger populations. For all plots, the data points and contours are weighted by their volume weighting in the Primary+ sample, and points are colour-coded by their NSA stellar mass. Representative error bars derived from Monte Carlo errors on the Lick index measurements are also displayed. The contours show a clear bimodality in Hβ and [MgFe]′, and age and metallicity for both the bulge and disk regions of the MaNGA lenticulars. This trend correlates strongly with stellar mass.

Сравнение характеристик балджей и дисков

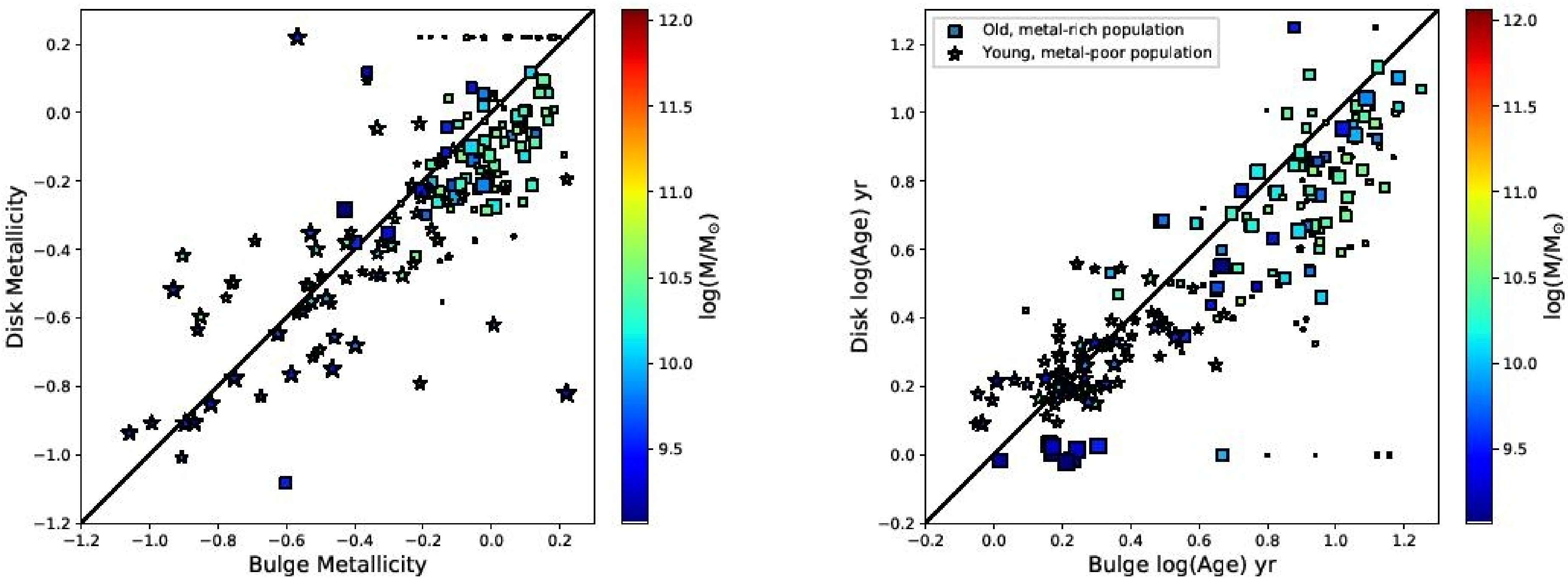
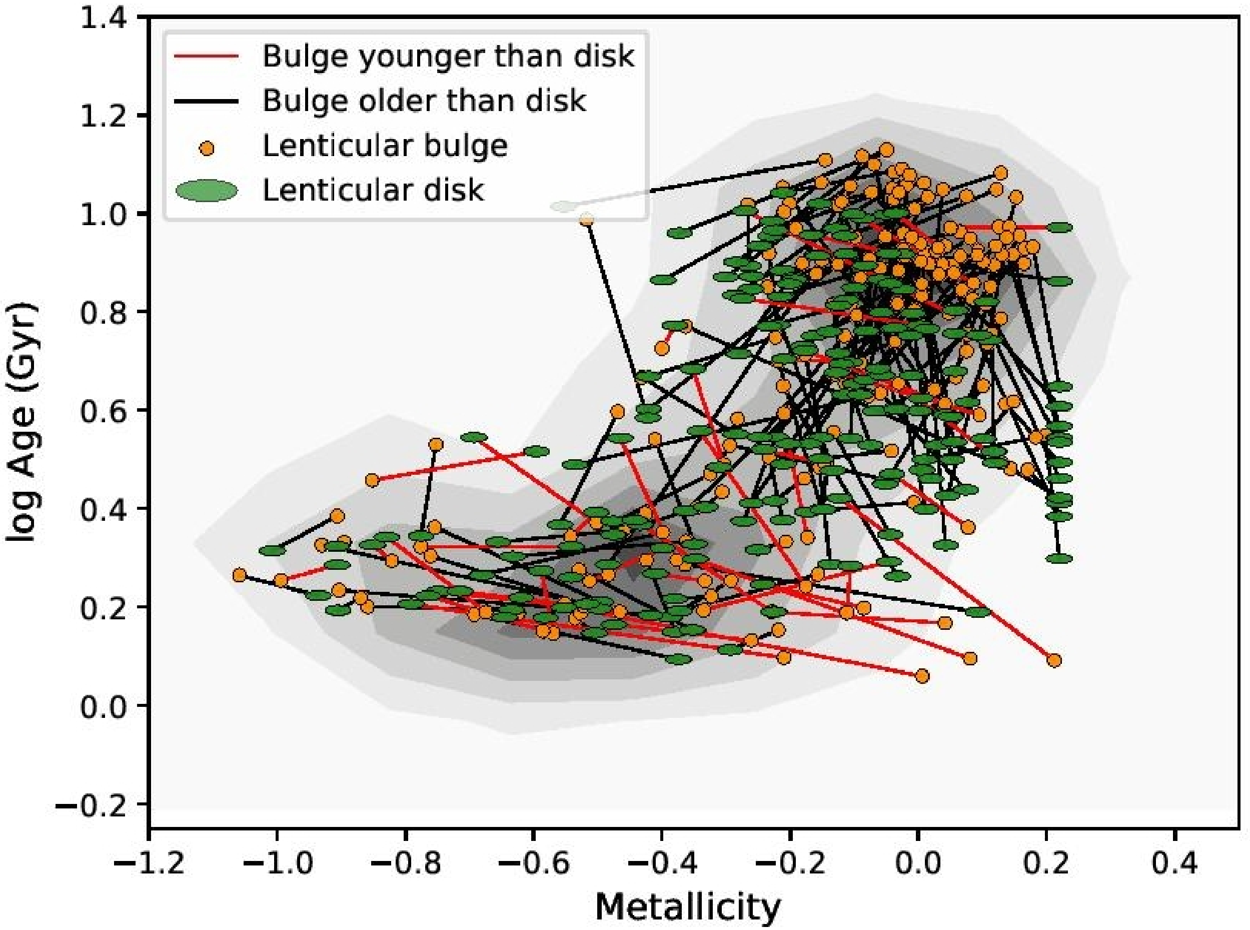


Figure 6. Comparison of bulge and disk metallicities (left) and ages (right) for MaNGA lenticulars. Each point is coloured by its stellar mass and weighted by its volume weighting in the Primary+ sample, and galaxies that are located above the dividing line of Figure 5b (predominantly old and metal-rich) are shown with square markers. Those below the dividing line are shown in star markers. In both panels there is a 1:1 line for comparison, and we see that on average, bulge and disk ages and metallicities are similar within a given galaxy. The bulges of higher-mass S0s are systematically older and more metal-rich than their disks.

А вот из этой картинки у них почему-то следует, что у массивных галактик балджи старше дисков, а у маломассивных - наоборот



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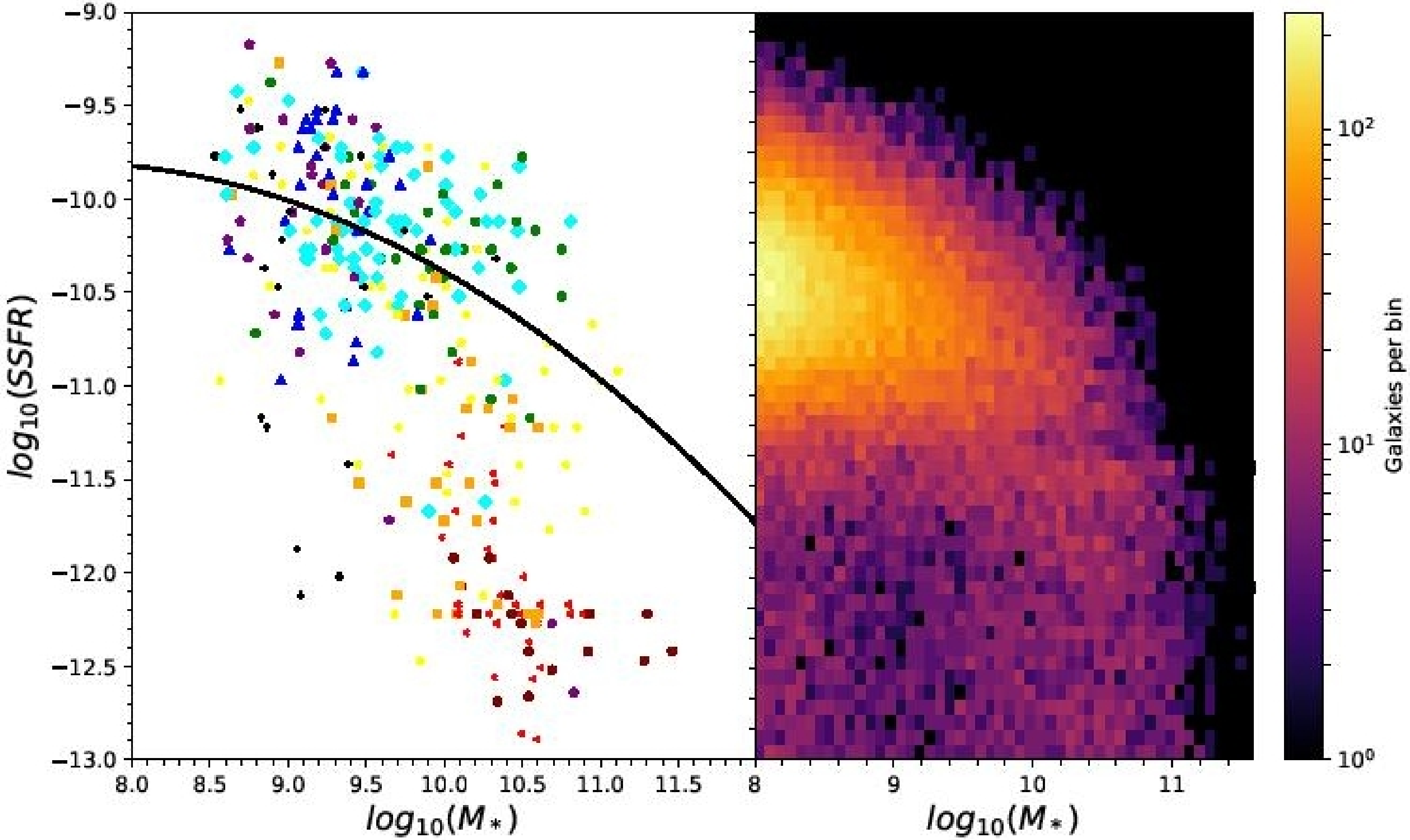
The Causes of the Red Sequence, the Blue Cloud, the Green Valley and the Green Mountain

Stephen A. Eales,[1★], Maarten Baes[2], Nathan Bourne[3], Malcolm Bremer[4] Michael J.I. Brown[5], Christopher Clark[1], David Clements[6], Pieter de Vis[7], Simon Driver[8], Loretta Dunne[1,3], Simon Dye[9], Cristina Furlanetto[10], Benne Holwerda[11], R.J. Ivison[12], L.S. Kelvin[13], Maritza Lara-Lopez[14], Lerothodi Leeuw[15], Jon Loveday[16], Steve Maddox[1,3], Michał J. Michałowski[17], Steven Phillipps[4], Aaron Robotham[8], Dan Smith[18], Matthew Smith[1], Elisabetta Valiante[1], Paul van der Werf[19] and Angus Wright[20]

[1] *School of Physics and Astronomy, Cardiff University, The Parade, Cardiff CF24 3AA, UK*
[2] *Sterrenkundig Observatorium, Universiteit Gent, Krijgslaan 281 S9, B-9000 Gent, Belgium*
[3] *Institute for Astronomy, The University of Edinburgh, Royal Observatory, Blackford Hill, Edinburgh, EH9 3HJ, UK*
[4] *Astrophysics Group, Department of Physics, University of Bristol, Tyndall Avenue, Bristol BS8 1TL*
[5] *School of Physics and Astronomy, Monash University, Clayton, Victoria 3800, Australia*
[6] *Astrophysics Group, Imperial College London, Blackett Laboratory, Prince Consort Road, London SW7 2AZ, UK*
[7] *Institut d'Astrophysique Spatiale, CNRS, Université Paris-Sud, Université Paris-Saclay, Bat. 121, 91405, Orsay Cedex, France*
[8] *International Centre for Radio Astronomy Research, 7 Fairway, The University of Western Australia, Crawley, Perth, WA 6009, Australia*
[9] *School of Physics and Astronomy, University of Nottingham, University Park, Nottingham NG7 2RD, UK*
[10] *Instituto de Física, Universidade Federal do Rio Grande do Sul, Av. Bento Gonçalves, 9500, 91501-970, Porto Alegre, RS, Bra*
[11] *Department of Physics and Astronomy, 102 Natural Science Building, University of Louisville, Louisville KY 40292, USA*
[12] *European Southern Observatory, Karl-Schwarzschild-Strasse 2, 85748, Garching, Germany*
[13] *Astrophysics Research Institute, Liverpool John Moores University, 146 Brownlow Hill, Liverpool L3 5RF, UK*
[14] *Dark Cosmology Centre, Niels Bohr Institute, University of Copenhagen, Juliane Maries Vej 30, DK-2100 Copenhagen, Denm*
[15] *College of Graduate Studies, University of South Africa, P.O. Box 392, UNISA, 0003, South Africa*

Непрерывная (!) последовательность «специфические темпы звездообразования-звездная масса галактики»



И бимодальная диаграмма «цвет-абсолютная зв. величина»

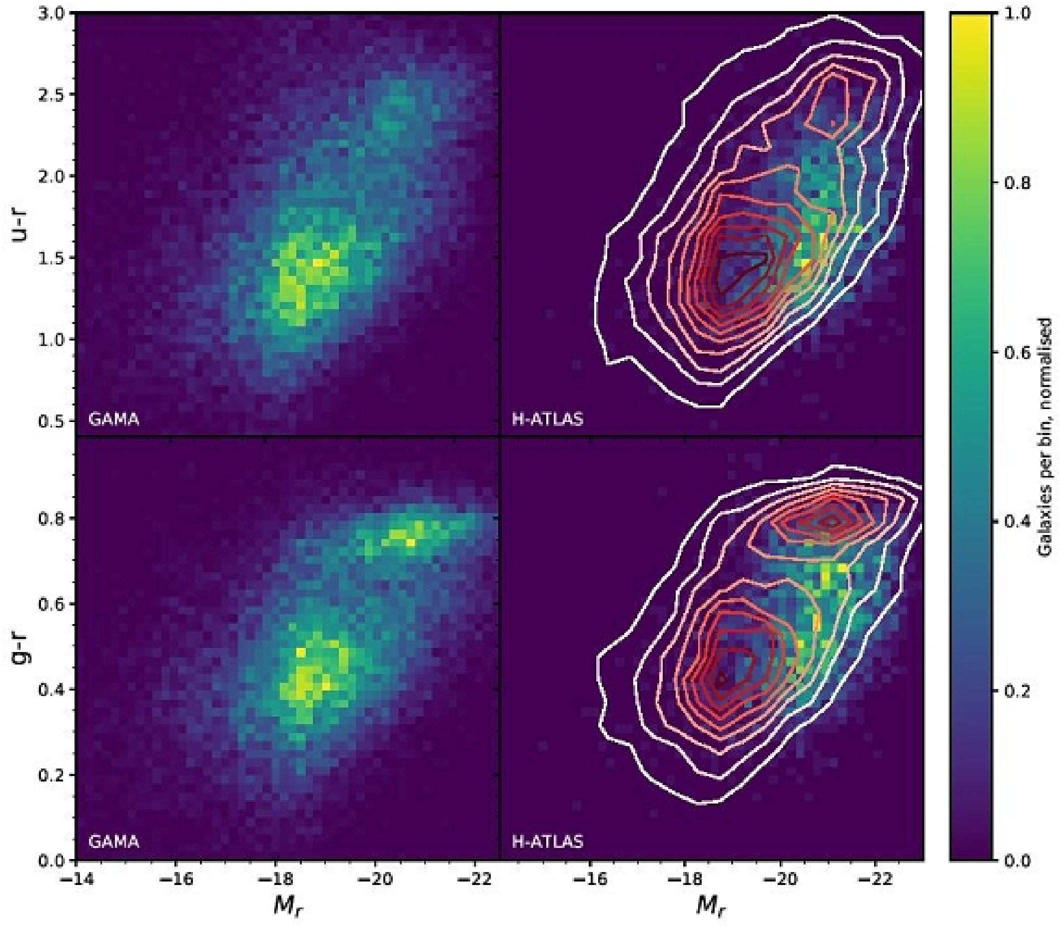


Figure 2. The distribution of galaxies in the colour versus absolute r-band magnitude plane, with the colour (see colour scale to the right) showing the density of galaxies in this diagram. The left-hand panels show the GAMA sample and the right-hand panels show the H-ATLAS sample, with the top panels showing $u - r$ colour versus absolute magnitude and the bottom panels showing $g - r$ versus abolute magnitude. The contours in the right-hand panels show the distributions for the GAMA galaxies that are shown by the colour scale in the left-hand panels.

Или в проекции на ось цветов – вот так:

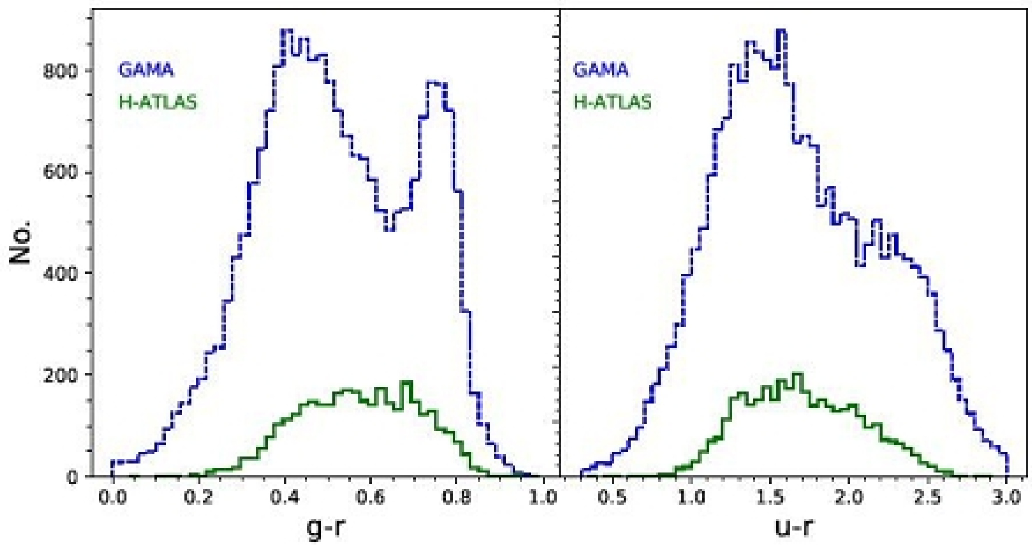


Figure 3. The distributions of $g - r$ colour (left) and $u - r$ (right). The blue (dashed) histogram shows the distribution for the GAMA sample and the green (solid line) histogram the distribution for the sample from H-ATLAS.

Замоделировали Монте-Карлом непрерывную последовательность “sSFR-M*” и спроецировали на плоскость цвет-звездная величина…

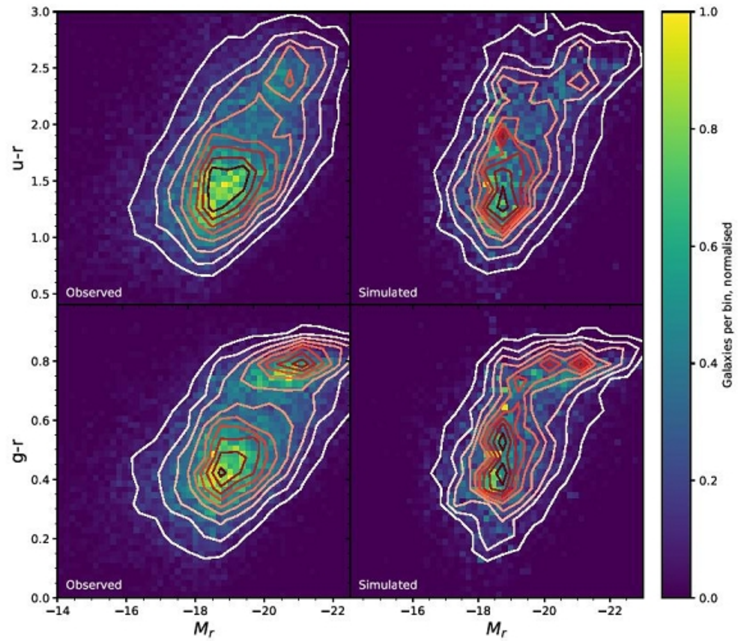


Figure 6. The distribution of galaxies in the colour versus r-band absolute magnitude diagram for the GAMA sample, with the colour showing the density of galaxies in the diagram (see colour bar to the right). The left-hand panels show the observed distributions, which are the same as shown in the left-hand panels of Figure 2. The right-hand panels show the results of our simulation of where the GAMA galaxies are expected to lie in this digram if galaxies lie on a continuous, curved Galaxy Sequence (§4).

Переход от sSFR и масс к цвету и светимости – через наблюдения обзора GAMA

40000 модельных галактик дают бимодальное распределение по цвету – хотя по SFR оно было непрерывным