

Astronomy for a Flat World
or
How a Dutch Schoolteacher found a Dead Quasar
or
What to do with 150,000 Free Research Assistants



It's a big sky out there









or, what to do with more than 125,000 research assistants.

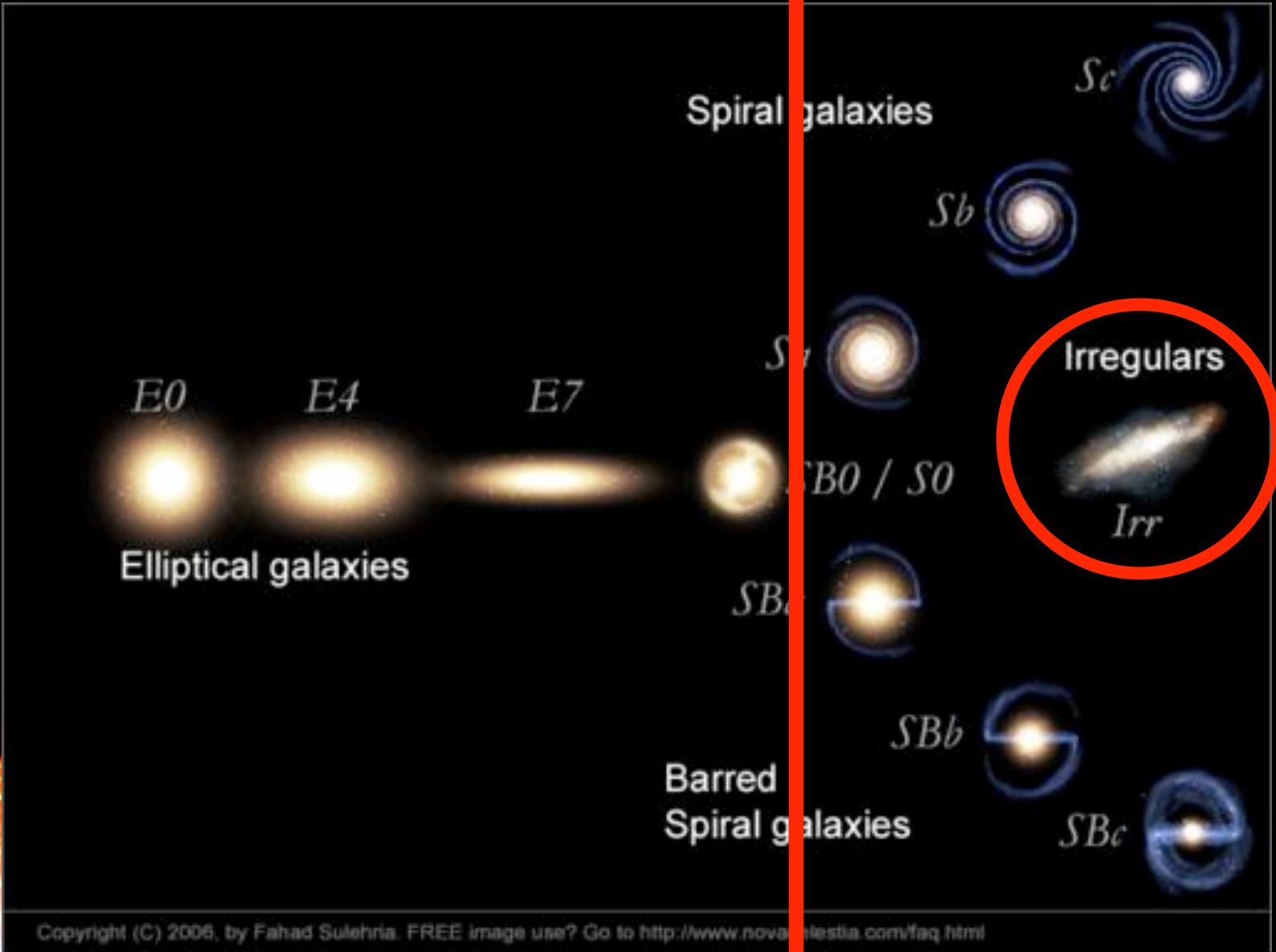


Chris Lintott

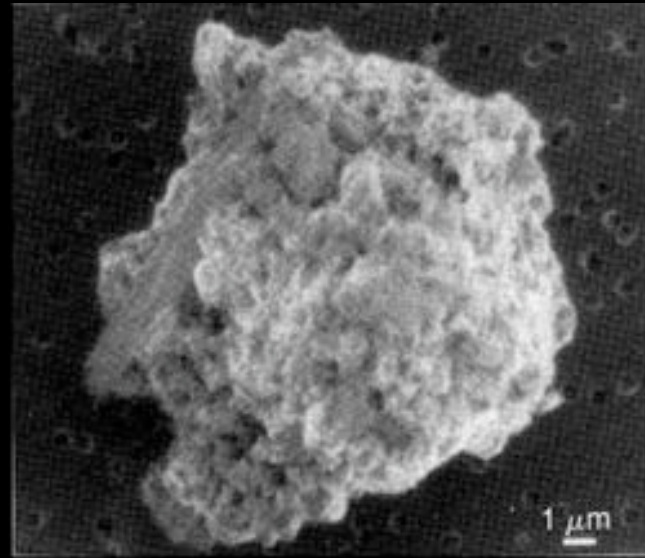
Somerville College

Kevin Schawinski, Kate Land,
Anze Slosar, Jordan Raddick,
Steven Bamford, Daniel Thomas,
Bob Nichol,
Alex Szalay, Jan van den Berg,
Phil Murray, Daniel Andreescu









<http://stardustathome.ssl.berkeley.edu>
Phase 1 : 40,000,000 views of dust
grains by ~20,000 people



GALAXY ZOO.org

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Galaxy Analysis

Galaxy Analysis

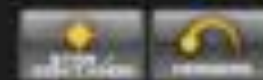
Welcome to Galaxy Zoo's view of the Universe. If you're here you should already have seen the [Tutorial](#), but feel free to go and remind yourself. There's no need to agonise for too long over any one image, just make your best guess in each case.



Show Grid Overlay on the next image

Galaxy Ref:
586010660371851294

Choose the Galaxy Profile
by clicking the buttons
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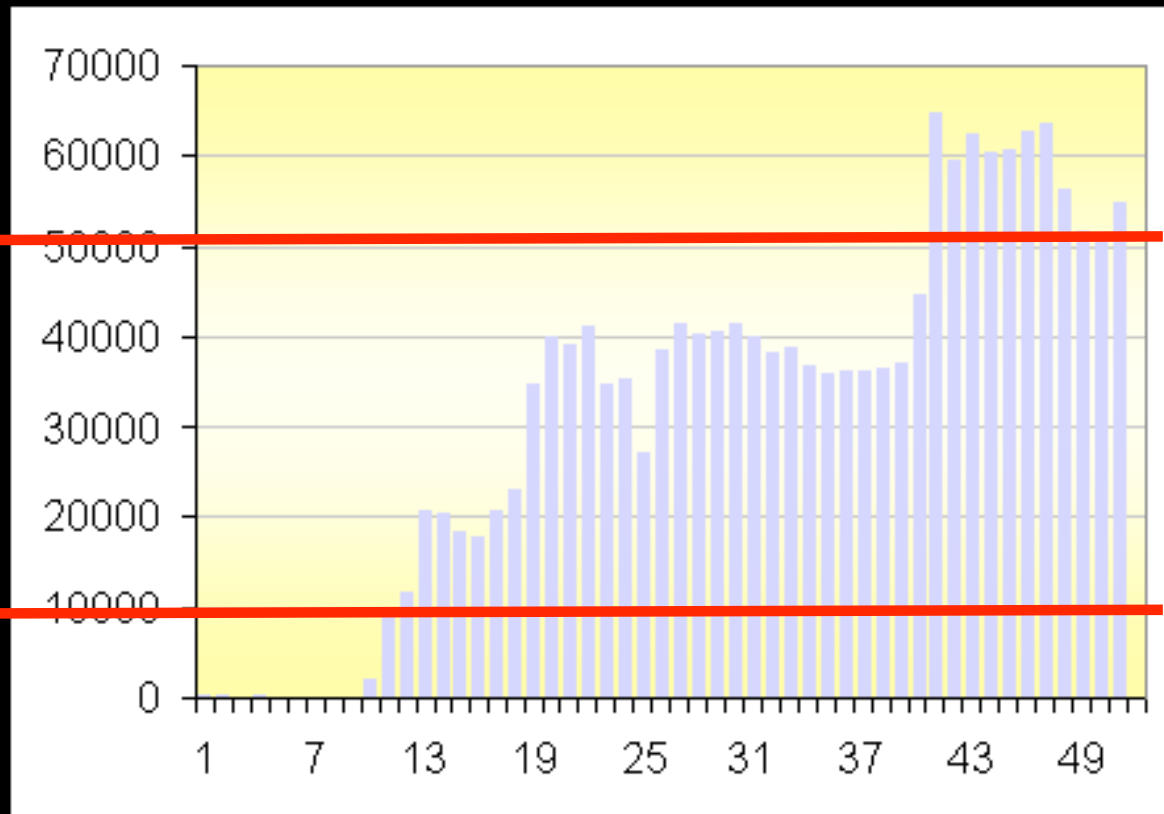
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Press & News

FAQ

1 Kevin-week

Fukugita et al. 07



The logo for Galaxy Zoo .org features the text "GALAXY ZOO" in a large, white, sans-serif font. The letter "O" is replaced by a glowing, orange and red spiral galaxy. To the right of the "O" is ".org" in a smaller, yellow font. The background is a dark, starry space scene.

GALAXY ZOO.org

Welcome

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| Galaxy Analysis

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| Press & News

| FAQ

>150,000 users
60,000,000 classifications
You're as good as the
professionals.

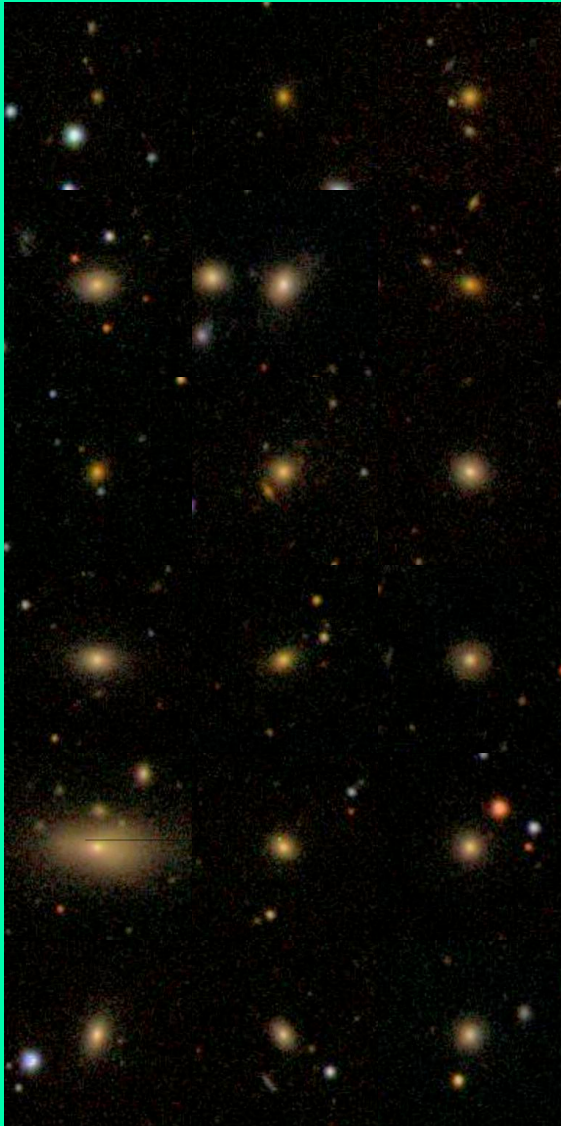
A close-up, low-angle view of the sun's surface, showing a bright, glowing orange and yellow sphere with a complex, cracked, and bubbling texture. The sun is partially obscured by a dark, curved shadow on the left side.



Clean

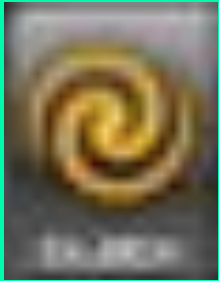


Superclean





Clean

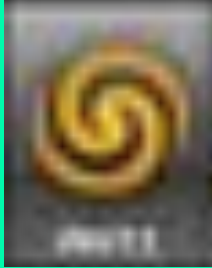
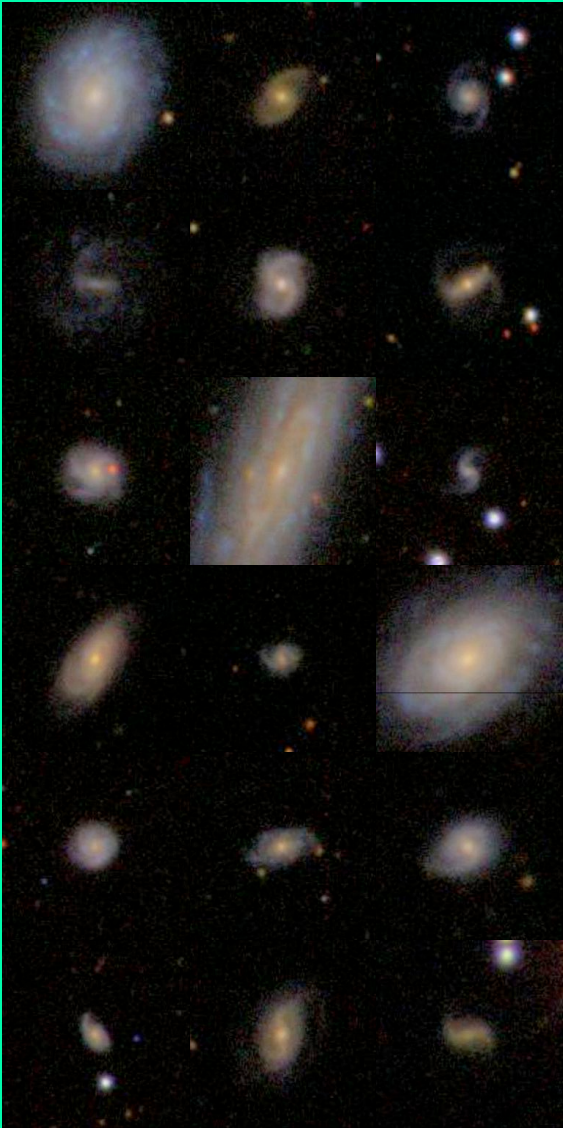


Superclean

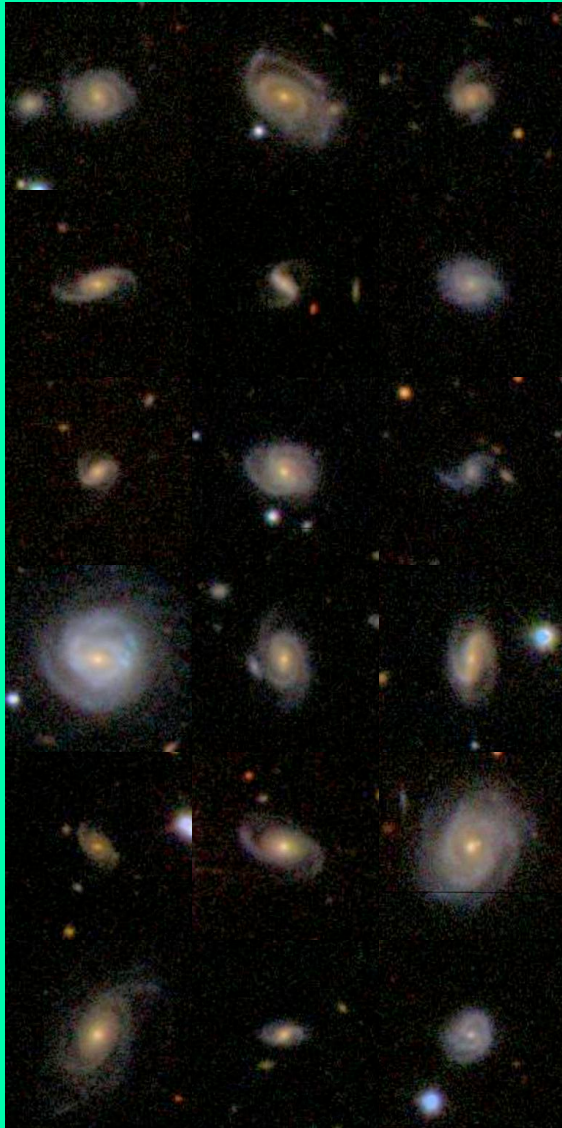




Clean

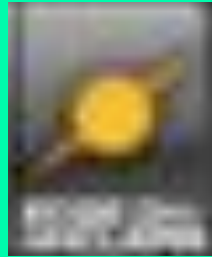
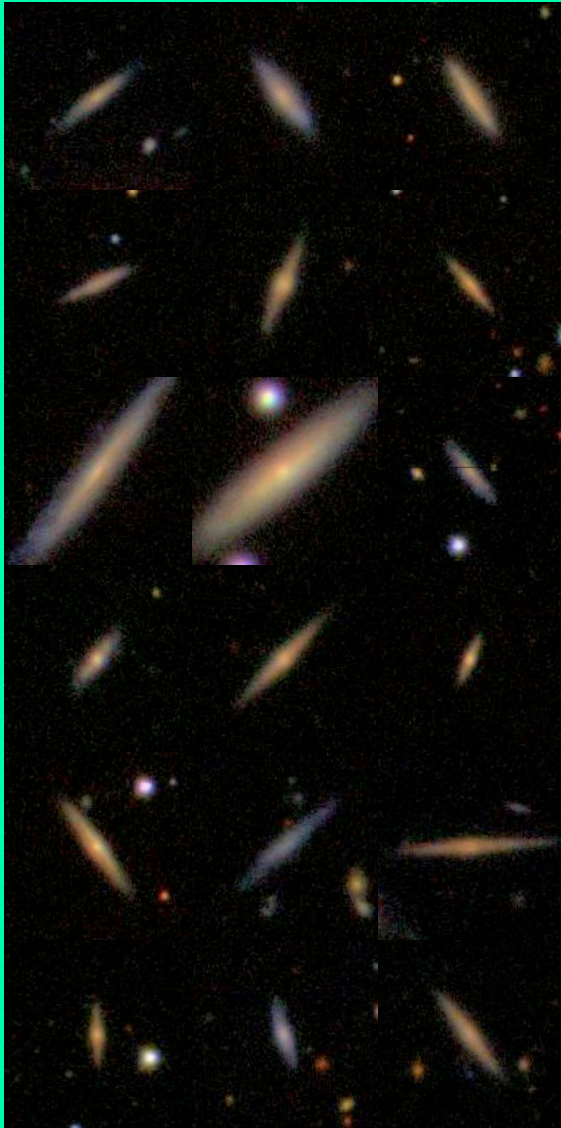


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Clean

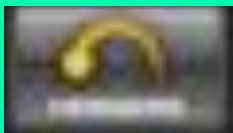


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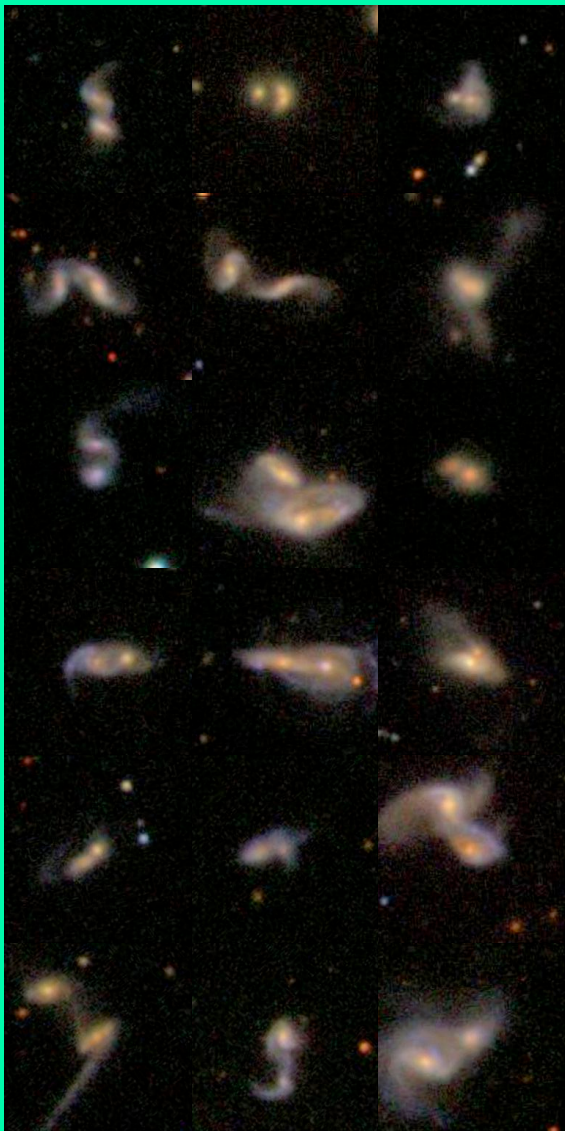


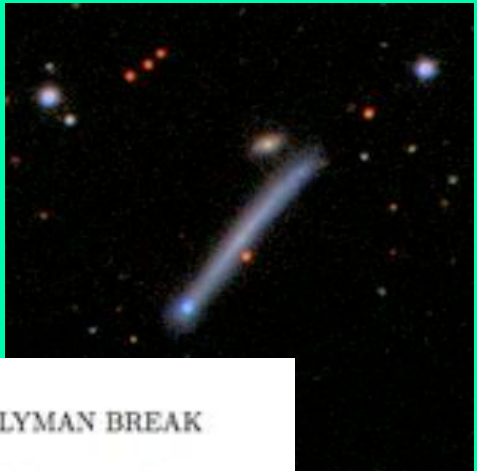


Clean



Superclean





THE 8 O'CLOCK ARC: A SERENDIPITOUS DISCOVERY OF A STRONGLY LENSED LYMAN BREAK GALAXY IN THE SDSS DR4 IMAGING DATA

SAHAR S. ALLAM^{1,2}, DOUGLAS L. TUCKER¹, HUAN LIN¹, H. THOMAS DIEHL¹, JAMES ANNIS¹, ELIZABETH J. BUCKLEY-GEER¹, JOSHUA A. FRIEMAN^{1,3}

Draft: August 25, 2007

ABSTRACT

We report on the serendipitous discovery of the brightest Lyman Break Galaxy (LBG) currently known, a galaxy at $z = 2.73$ that is being strongly lensed by the $z = 0.38$ Luminous Red Galaxy (LRG) SDSS J002240.91+143110.4. The arc of this gravitational lens system, which we have dubbed the "8 o'clock arc" due to its time of discovery, was initially identified in the imaging data of the Sloan Digital Sky Survey Data Release 4 (SDSS DR4); followup observations on the Astrophysical Research Consortium (ARC) 3.5m telescope at Apache Point Observatory confirmed the lensing nature of this system and led to the identification of the arc's spectrum as that of an LBG. The arc has a spectrum and a redshift remarkably similar to those of the previous record-holder for brightest LBG (MS 1512-cB58, a.k.a "cB58"), but, with an estimated total magnitude of $(g,r,i) = (20.0, 19.2, 19.0)$ and surface brightness of $(\mu_g, \mu_r, \mu_i) = (23.3, 22.5, 22.3)$ mag arcsec⁻², the 8 o'clock arc is thrice as bright. The 8 o'clock arc, which consists of three lensed images of the LBG, is 162° (9.6") long and has a length-to-width ratio of 6:1. A fourth image of the LBG — a counter-image — can also be identified in the ARC 3.5m g -band images. A simple lens model for the system assuming a singular isothermal ellipsoid potential yields an Einstein radius of $\theta_{\text{Ein}} = 2.91'' \pm 0.14''$, a total mass for the lensing LRG (within the $10.6 \pm 0.5 h^{-1}$ kpc enclosed by the lensed images) of $1.04 \times 10^{12} h^{-1} M_{\odot}$, and a magnification factor for the LBG of $12.3^{+15}_{-3.6}$. The LBG itself is intrinsically quite luminous ($\approx 6 \times L_{*}$) and shows indications of massive recent star formation, perhaps as high as $160 h^{-1} M_{\odot} \text{ yr}^{-1}$.

Subject headings: gravitational lensing — galaxies: high-redshift



2. Overlapping galaxies (PI : Bill Keel, U. of Alabama)



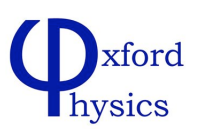
*“I've kept track of the promising ones seen on galaxy zoo forum so far
I knew intellectually that the number of superposed pairs was a strong
function of survey depth, but this is breathtaking.”*

5 nights of follow-up time with the
WIYN 3.5m in April 2008. Three
more scheduled in November.
Finding list now > 1000





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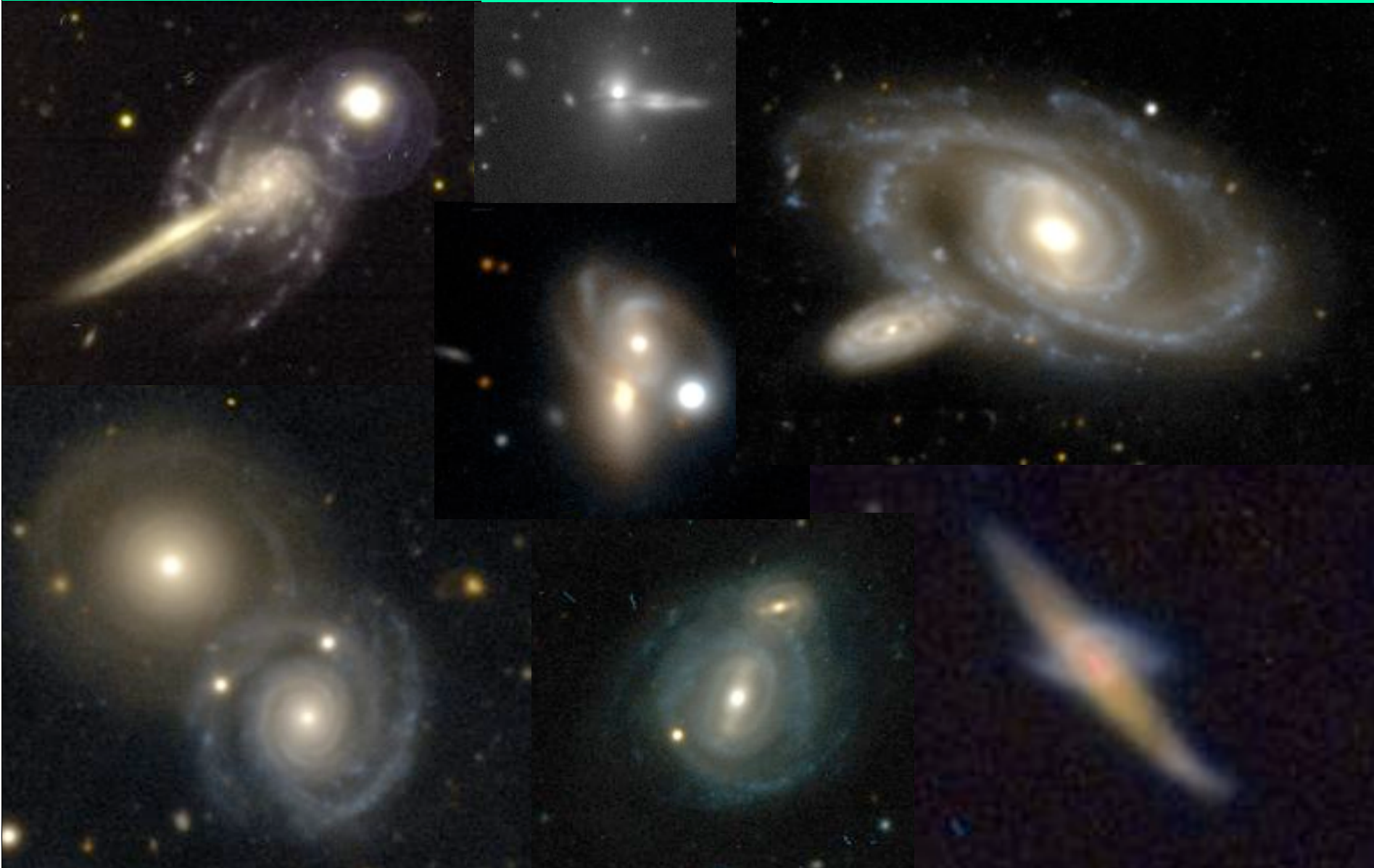


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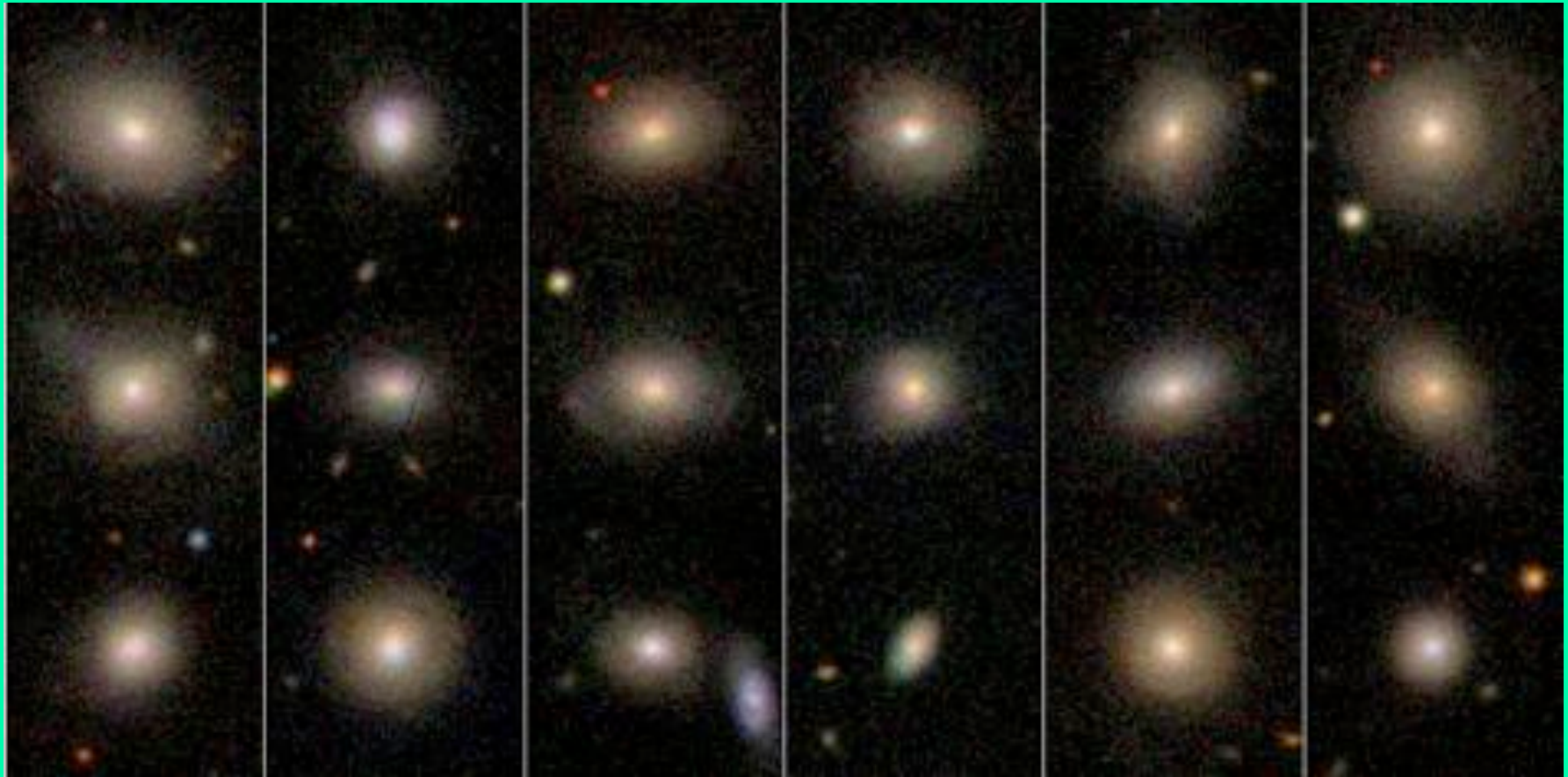


Dust extinction map





3. Blue ellipticals : ~ 250 galaxies at $z < 0.05$

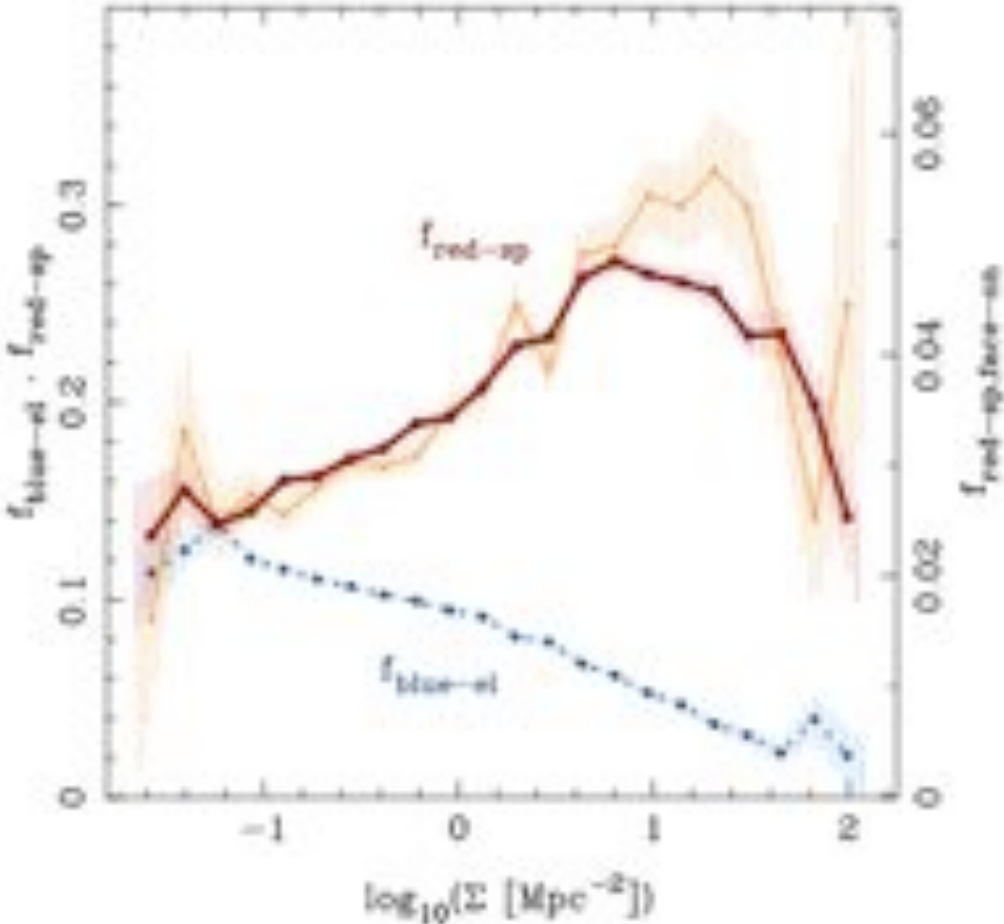


SFR between 0.5 and 50 (!) solar masses per year



4. Galaxy Morphology

18 S. P. Bamford et al. (MNRAS submitted)



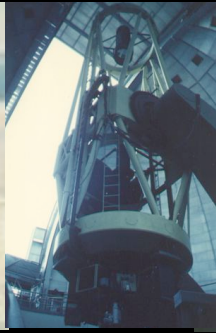
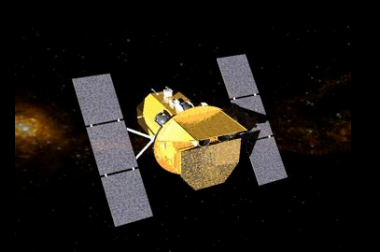
Red does not necessarily mean elliptical

The colour bimodality is not identically the same as the morphology one

Morphology-density function for 100733 galaxies at $0.03 < z < 0.085$

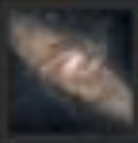


Hanny's Voorwerp: a quasar light echo?



Hello NGC3314

March 26, 2008, 03:38:14 AM



Show unread posts since last visit.
Show new replies to your posts.
Total time logged in: 8 days, 19 hours and 59 minutes.

News: New Galaxy Zoo Forum is launched! (Note: this requires a separate registration)

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Galaxy Zoo Forum > The objects > Weird and wonderful (Moderators: Alice, Edd, StuartA, bamford) > The Hanny's Voorwerp.

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Author

Topic: The Hanny's Voorwerp. (Read 6426 times)

Hanny

Hero Member
★★★★★
Posts: 7205



"Voorwerp kid"



The Hanny's Voorwerp.

• posted August 13, 2007, 06:16:40 AM •

Quote

What's the blue stuff below?

Anyone?

<http://cas.edss.org/astro/en/tools/chart/chart.asp?ra=145.2671505&dec=34.73290502>



[O III] 4959,5007

H β

He II 4686

[O III] 4363

H γ

H δ

H ϵ + [Ne III] 3968

H ζ

[Ne III] 3869

[O II] 3726,3729

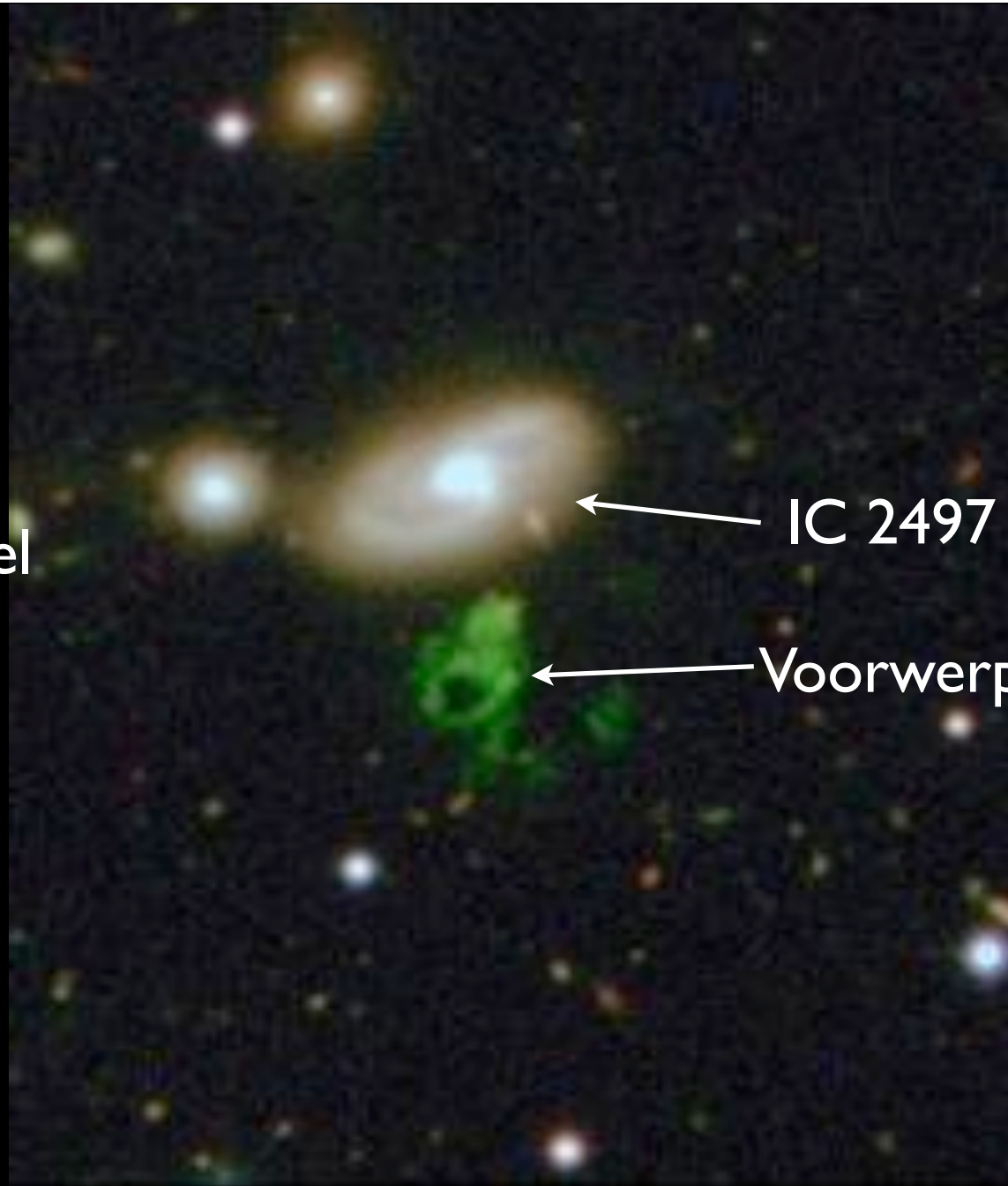
[Ne V] 3426

[O II] in IC 2497





Hanny van Arkel

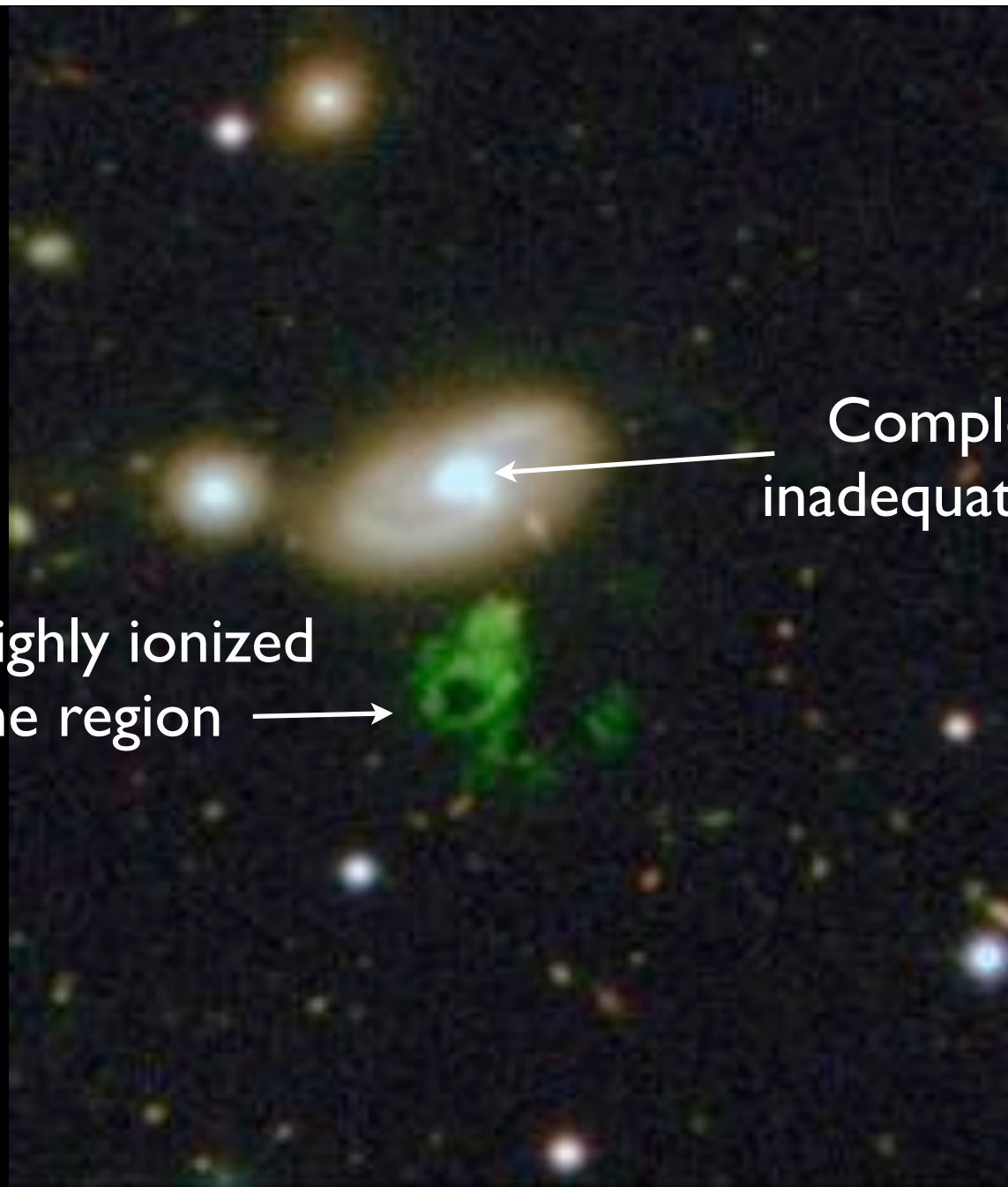


IC 2497

Voorwerp

Large-scale, highly ionized
narrow-line region →

← Completely
inadequate AGN



[O III] 4959,5007

H β

He II 4686

[O III] 4363

H γ

H δ

H ϵ + [Ne III] 3968

H ζ

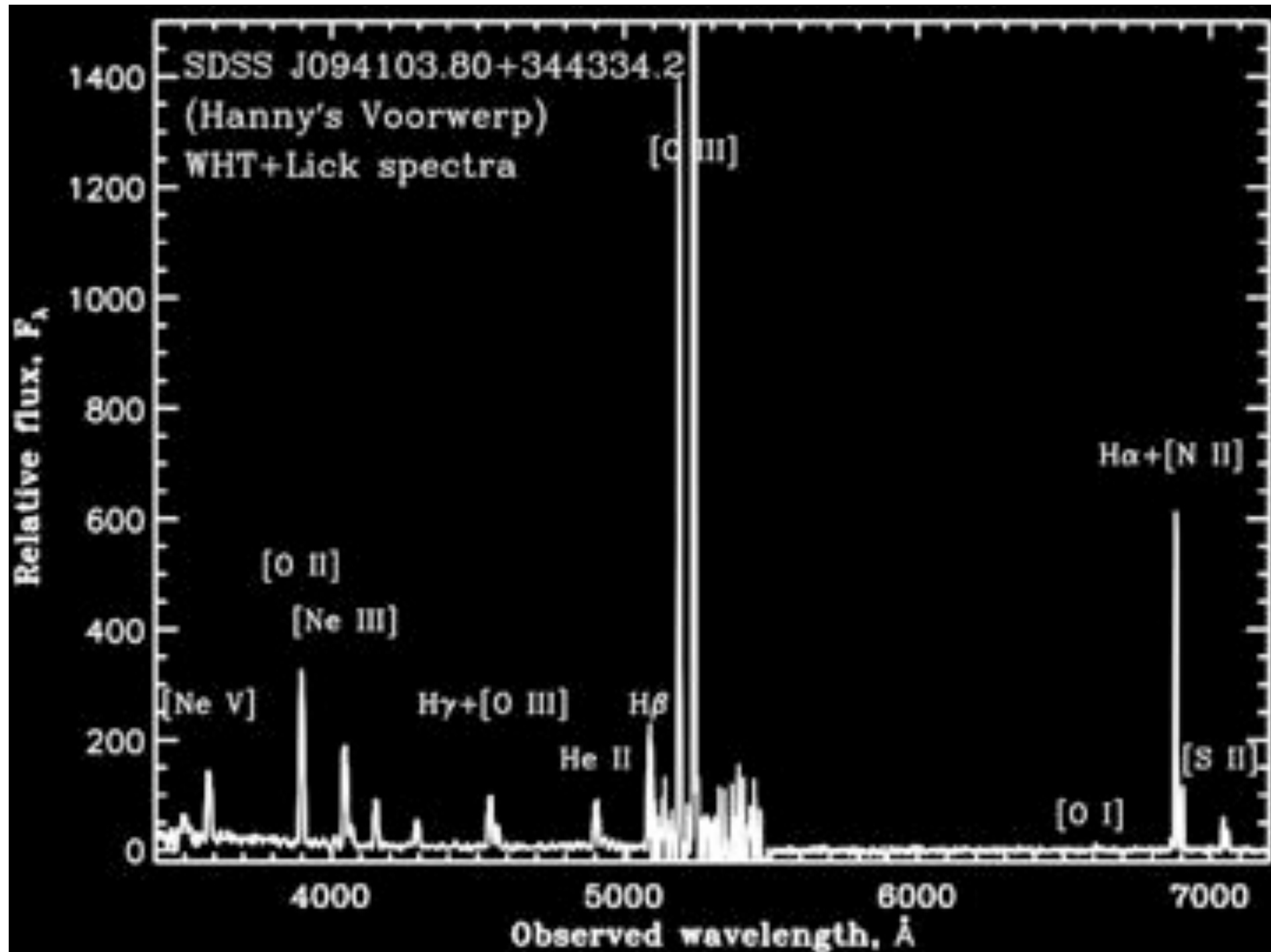
[Ne III] 3869

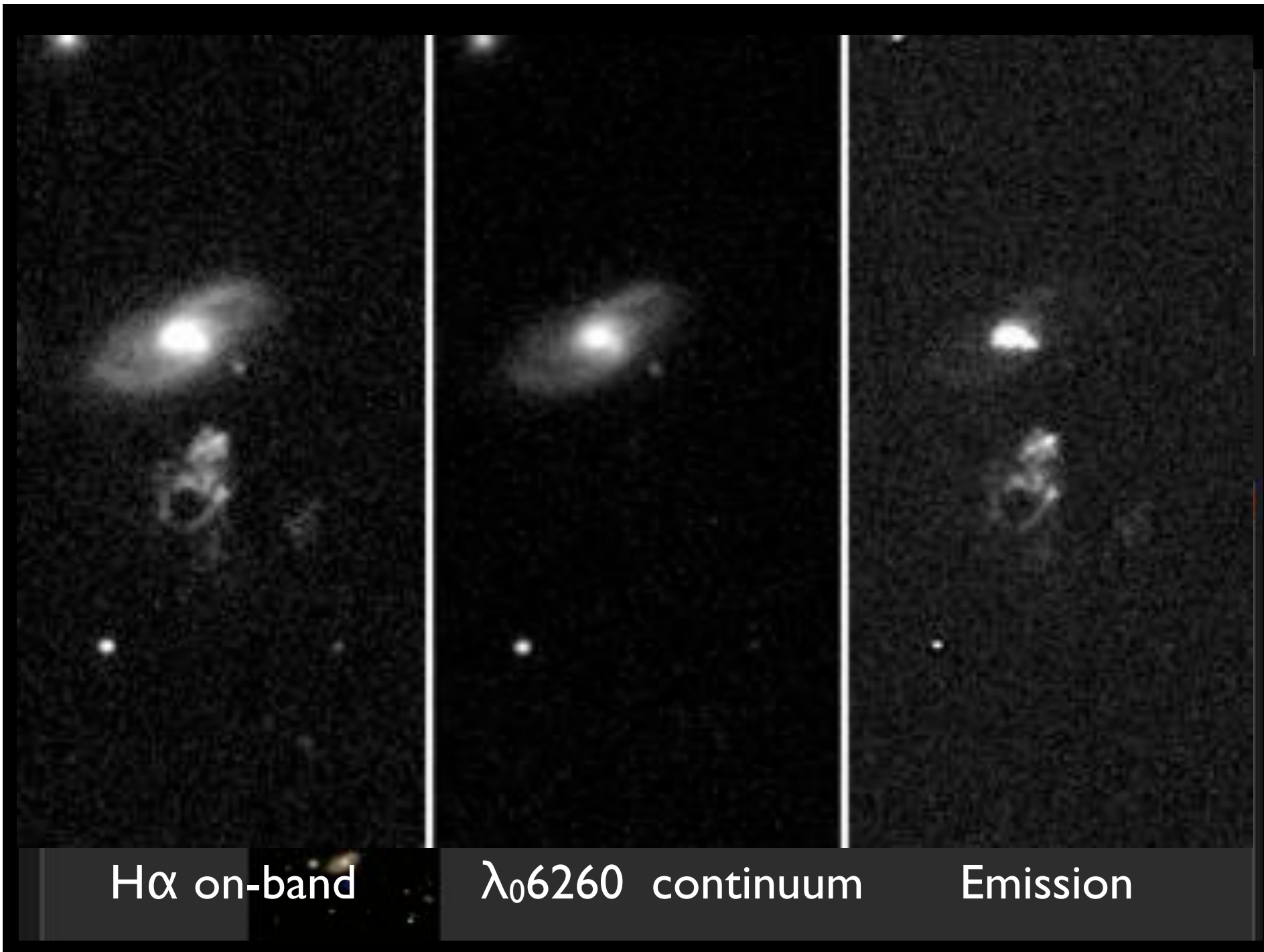
[O II] 3726,3729

[Ne V] 3426

[O II] in IC 2497







H α on-band

λ_06260 continuum

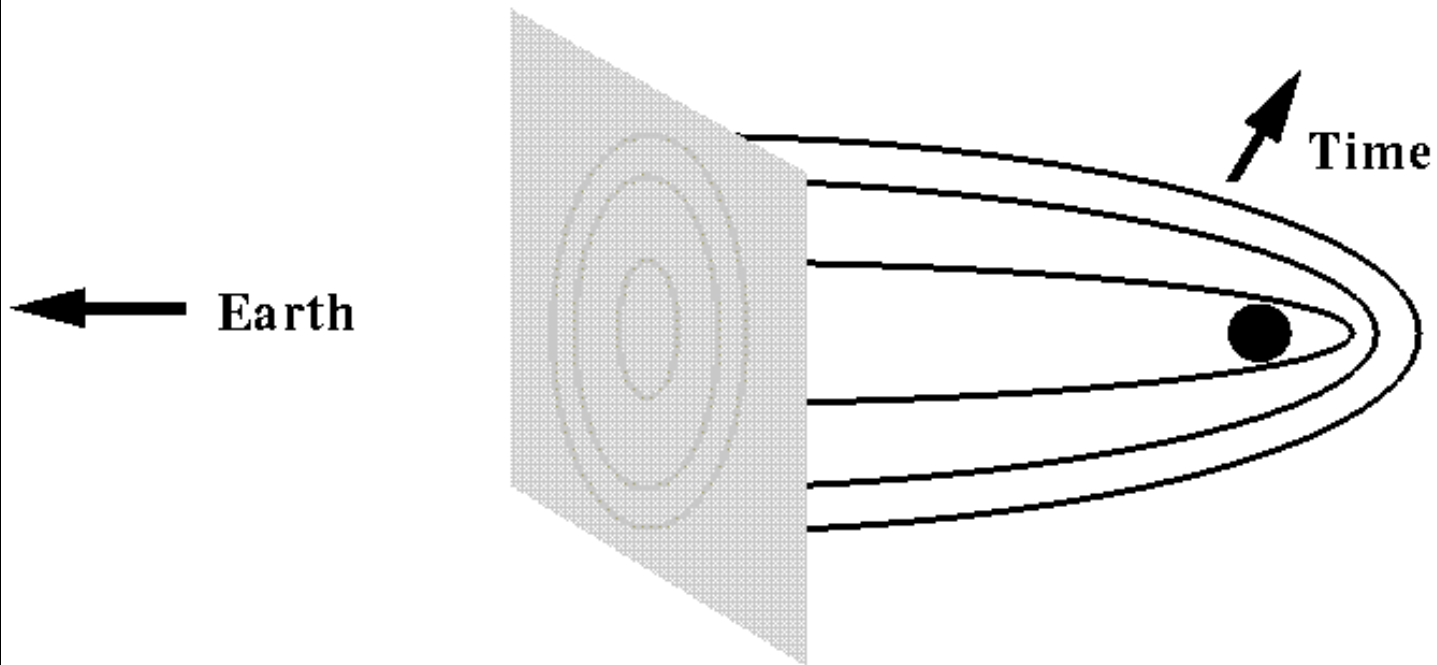
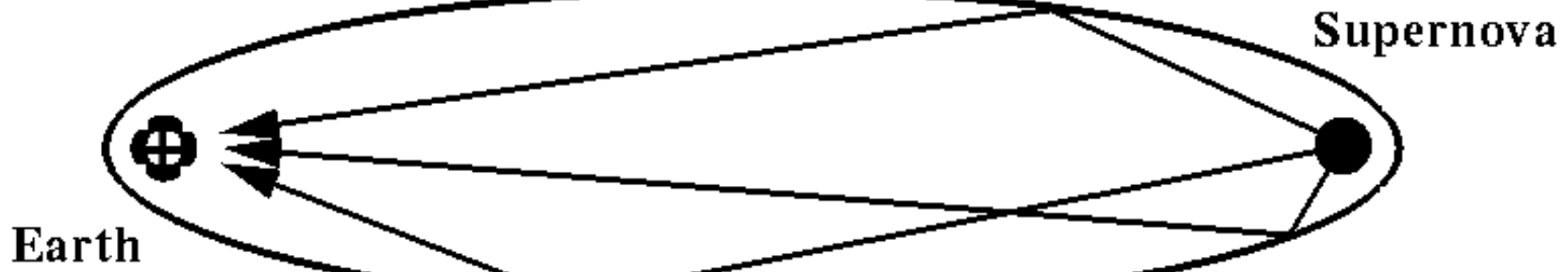
Emission



Swift UVW2 2000 A



SARA V convolved





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updated 11:18 a.m. EDT, The August 7, 2008

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Armchair astronomer finds 'cosmic ghost'

Hanny van Arkel was going over photos of galaxies on the Internet last August when she stumbled across a strange object: a bright, generous mass with a gaping hole in its middle. Van Arkel is a schoolteacher in the Netherlands, not an astrophysicist. But her find -- what some are calling a "cosmic ghost" -- has captivated astronomers. [Full story](#)

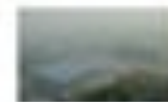
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- 'Girls Just Wanna Have Fun' writer dies
- Lawyer: Morgan Freeman, wife divorcing
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- Owners cuddle, dress pets ... then fry them [1 min](#)
- CNN Wire: Sadrist reorganization to be...

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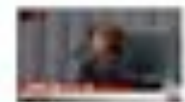
Video >



Beijing pollution 1:04



AC 360: The Shot 1:25



Las Vegas judge faces disciplinary hearing **LIVE**

LIVE: [Today on iReport.com](#)





Pan-STARRS



All asteroids larger than 1km
and most larger than 300m
(Up to 10 million asteroids
catalogued, + 100s of comets)
Binary stars, and extrasolar
planets
3d catalogue of our solar
neighbourhood (100pc)
Supernovae, microquasars,
GRB, AGN...
Ultradeep galaxy survey
& Galaxy Zoo 3



Large Synoptic Survey Telescope (LSST)



8.4m mirror
2-degree field
3.2 Gpix imager
30 Terabytes/night
Cerro Pachon, Chile
Sky/three nights
Depth: mag 26.5
OTF transient IDs

GZ 4?



It's a big sky out there
but all together we can grok more of it.

A dense field of galaxies in various colors and orientations against a black background. The galaxies are scattered across the frame, with some appearing as bright yellow or orange points and others as fainter, more diffuse structures. The overall appearance is that of a vast, multi-colored galaxy population.

www.galaxyzoo.org

It's a big sky out there
but all together we can grok more of it.

www.galaxyzoo.org

Special thanks to...

Jonas Bonin ■ Harald Horneff ■ Graham Webber

Luke Drury ■ Andrew G. Esquilant

Hassam Dodia ■ Adam K Brookman

Al Jenkins ■ Matt Johnson ■ Allen Mole

Martin Nicholls ■ Gregory Ruderman

Philip Howie

and 150,000 other participants worldwide.

It's a big sky out there
but all together we can grok more of it.