

Ayudando desde Uniandes a construir el mapa más grande del Universo

Jaime E. Forero-Romero (Uniandes)

Febrero 2021



El conocimiento
es de todos

Colciencias



European
Commission

Horizon 2020
European Union funding
for Research & Innovation



RA,Dec = 216.2432, 34.9465, zoom 12



5 arcmin

Contrast: 1

Brightness: 1

Jump to object:

Custom catalog upload (FITS table; RA,Dec,[name]):

No file chosen

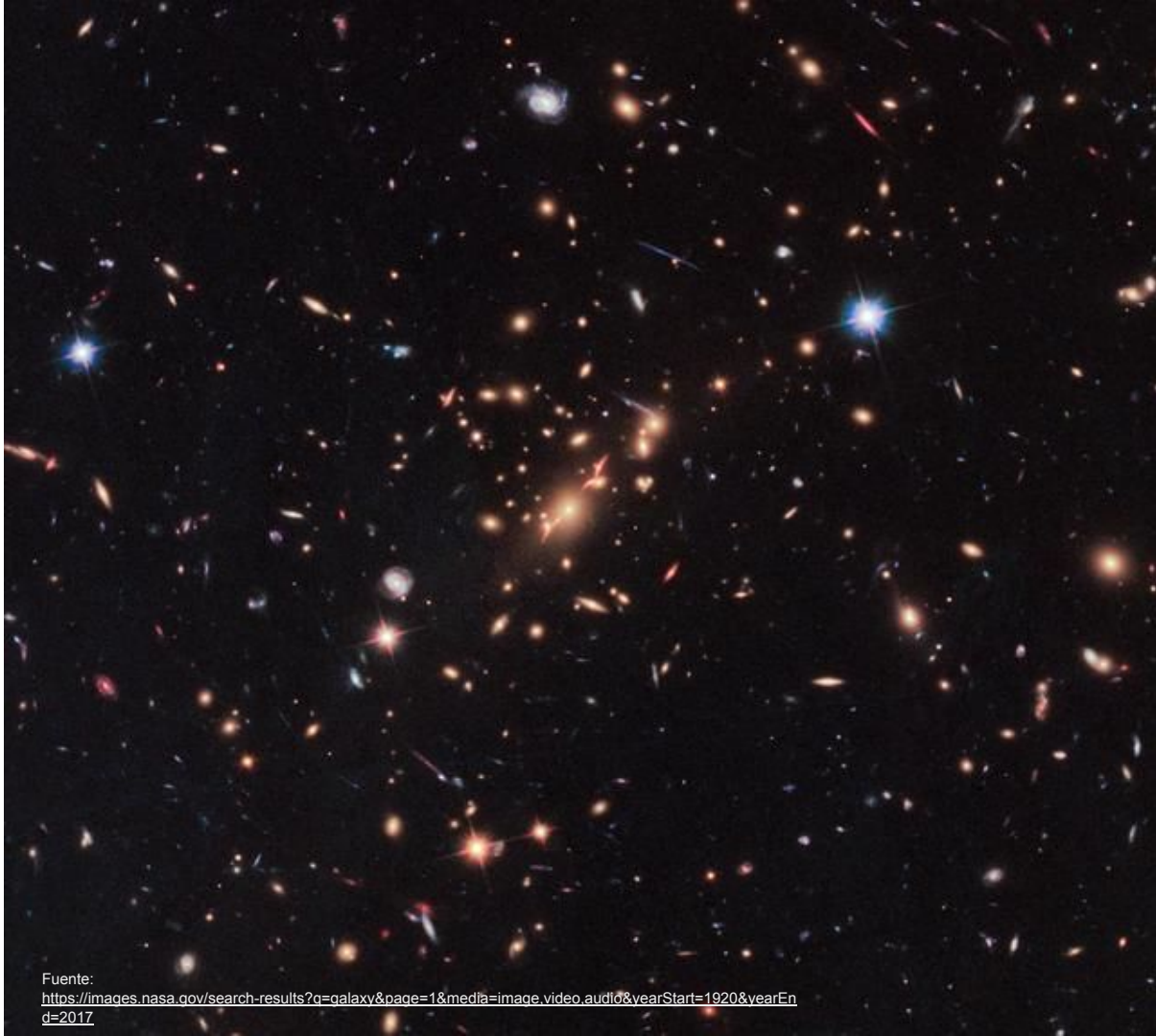
- Legacy Surveys DR9-SV images
- Legacy Surveys DR9-SV models
- Legacy Surveys DR9-SV residuals
- + Legacy Surveys DR9-SV-north images
- + Legacy Surveys DR9-SV-south images
- Legacy Surveys DR8 images
 - Legacy Surveys DR8 models
 - Legacy Surveys DR8 residuals
- + Legacy Surveys DR8-north images
- + Legacy Surveys DR8-south images
- Legacy Surveys DR6+DR7 images
- + DECaLS DR7 images
- + MzLS+BASS DR6 images
- DECaLS DR5 images
- + DECaPS images
- + unWISE W1/W2 NEO6
- unWISE Catalog Model
- More surveys
 - SDSS images
 - DES DR1
 - HSC DR2 images
 - VLASS 1.2 images
 - GALEX
 - WISE 12-micron dust map
 - SFD dust map
 - Halpha map
- Legacy Surveys Bricks
- + Legacy Surveys DR9-SV CCDs
- + Legacy Surveys DR8 CCDs
- + DECaLS DR7 CCDs
- SNSS core



Fuente: https://commons.wikimedia.org/wiki/File:Panoramic_Large_and_Small_Magellanic_Clouds.jpg

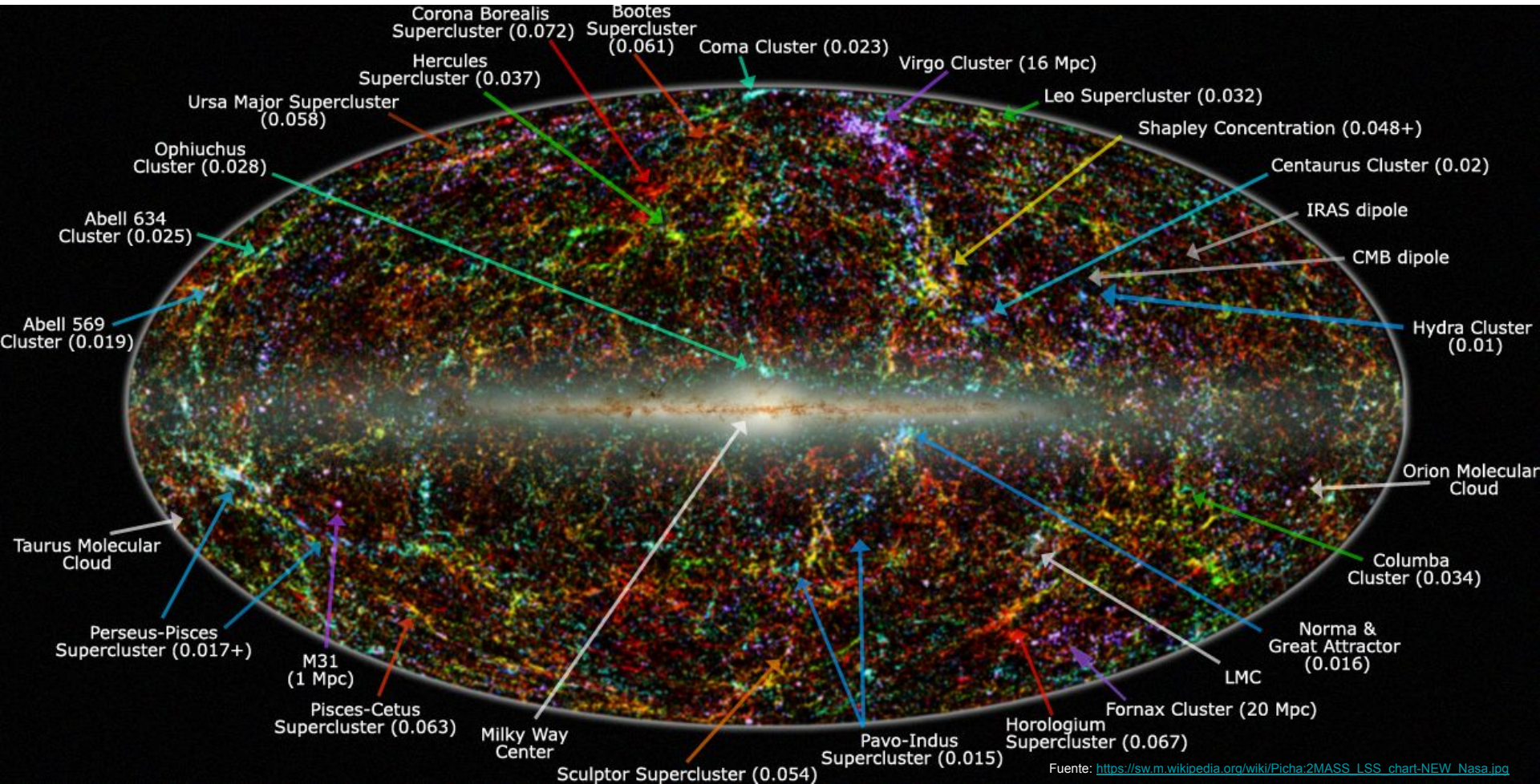


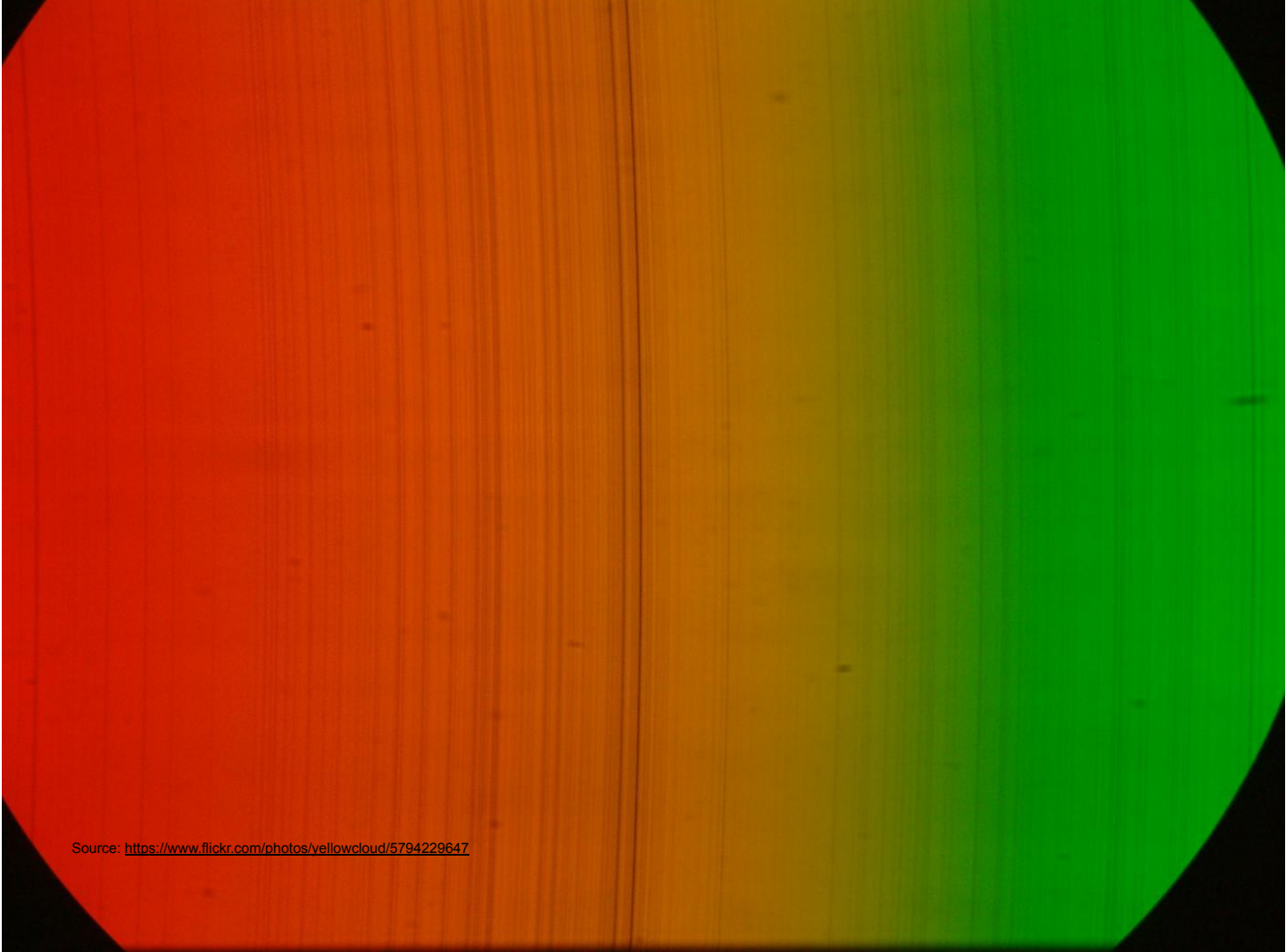
Fuente: [https://en.wikipedia.org/wiki/File:Andromeda_Galaxy_\(with_h-alpha\).jpg](https://en.wikipedia.org/wiki/File:Andromeda_Galaxy_(with_h-alpha).jpg)



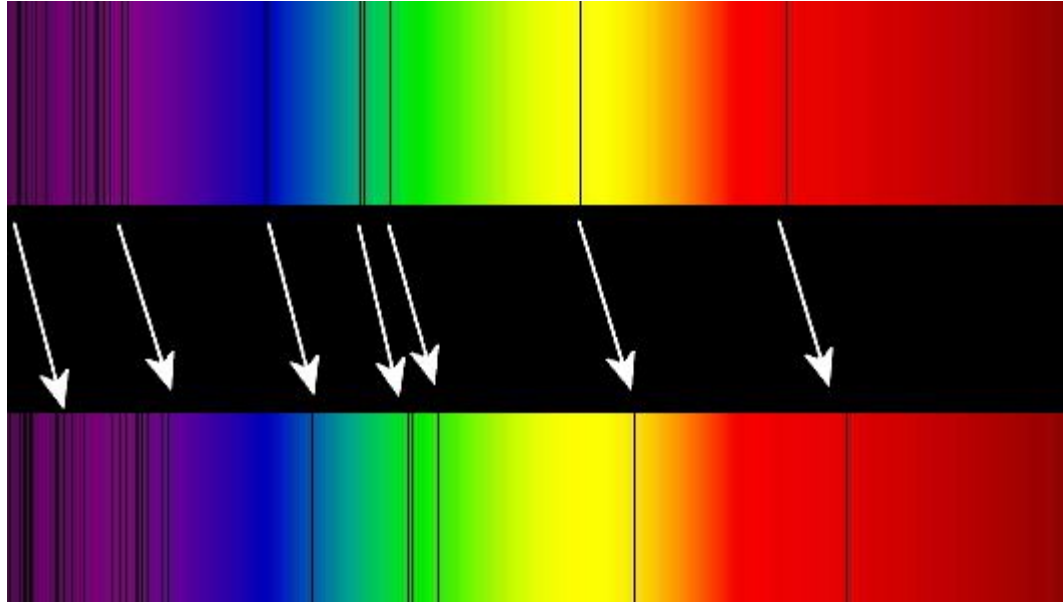
Fuente:

https://images.nasa.gov/search-results?q=galaxy&page=1&media=image_video_audio&yearStart=1920&yearEnd=2017

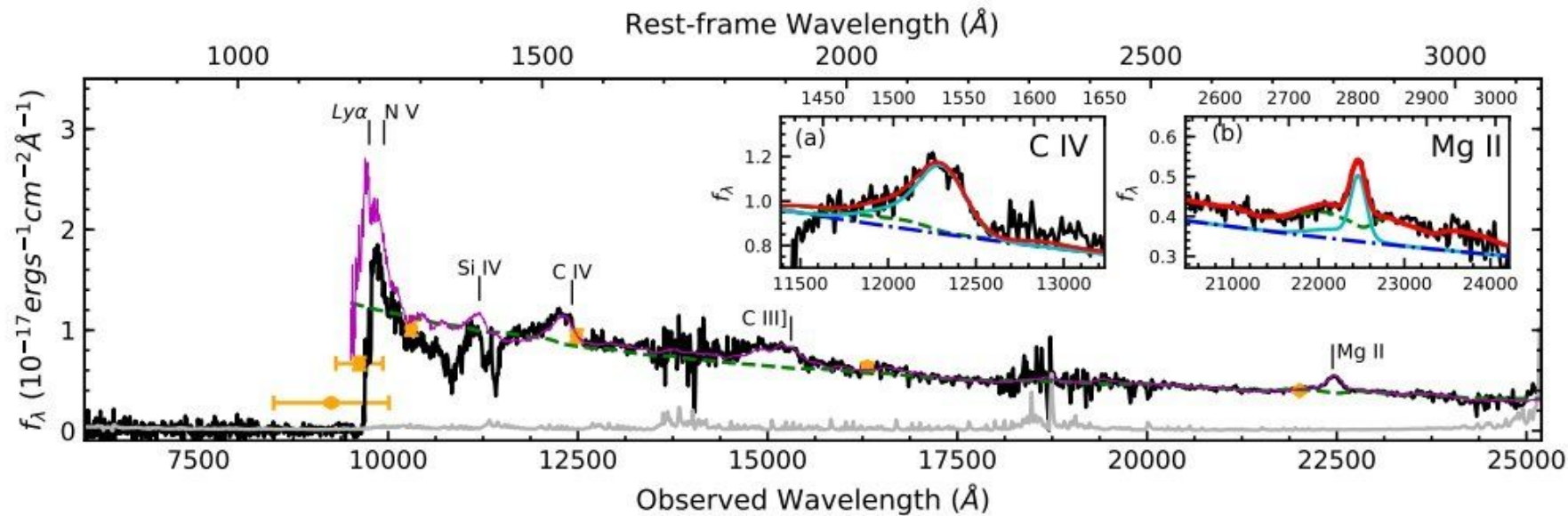




Source: <https://www.flickr.com/photos/yellowcloud/5794229647>

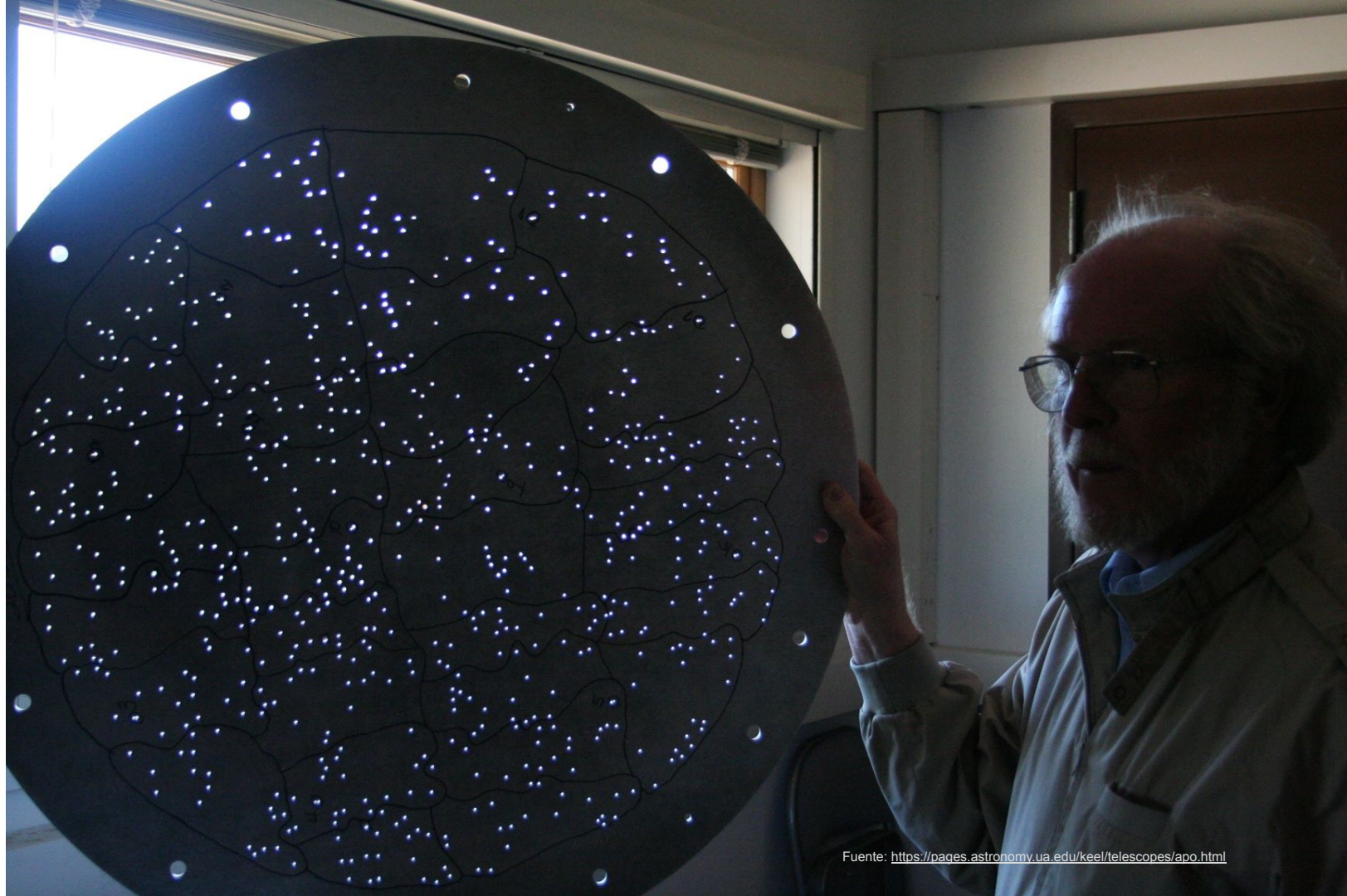


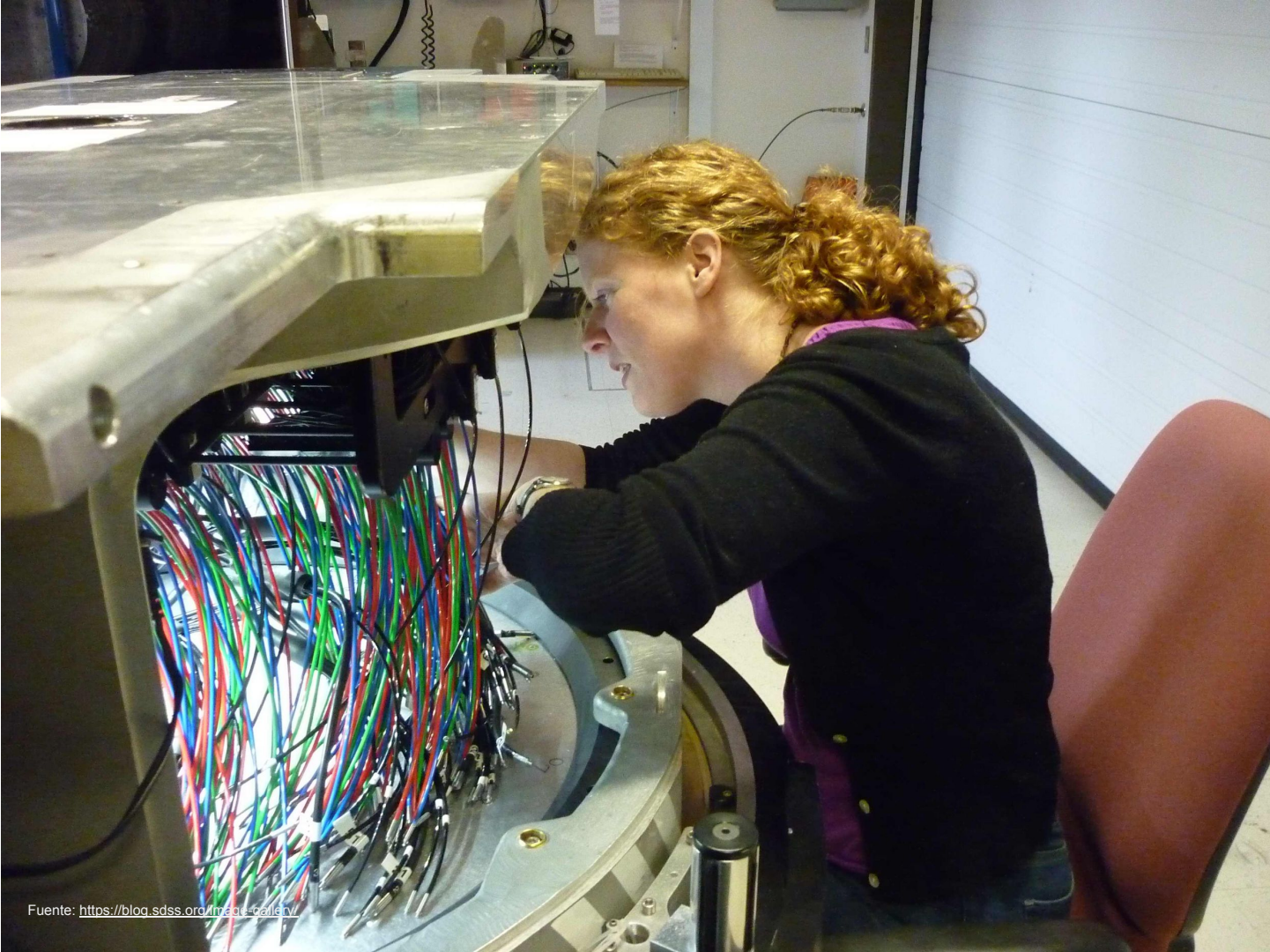
Fuente: https://commons.wikimedia.org/wiki/File:Redshift_horizontal.png

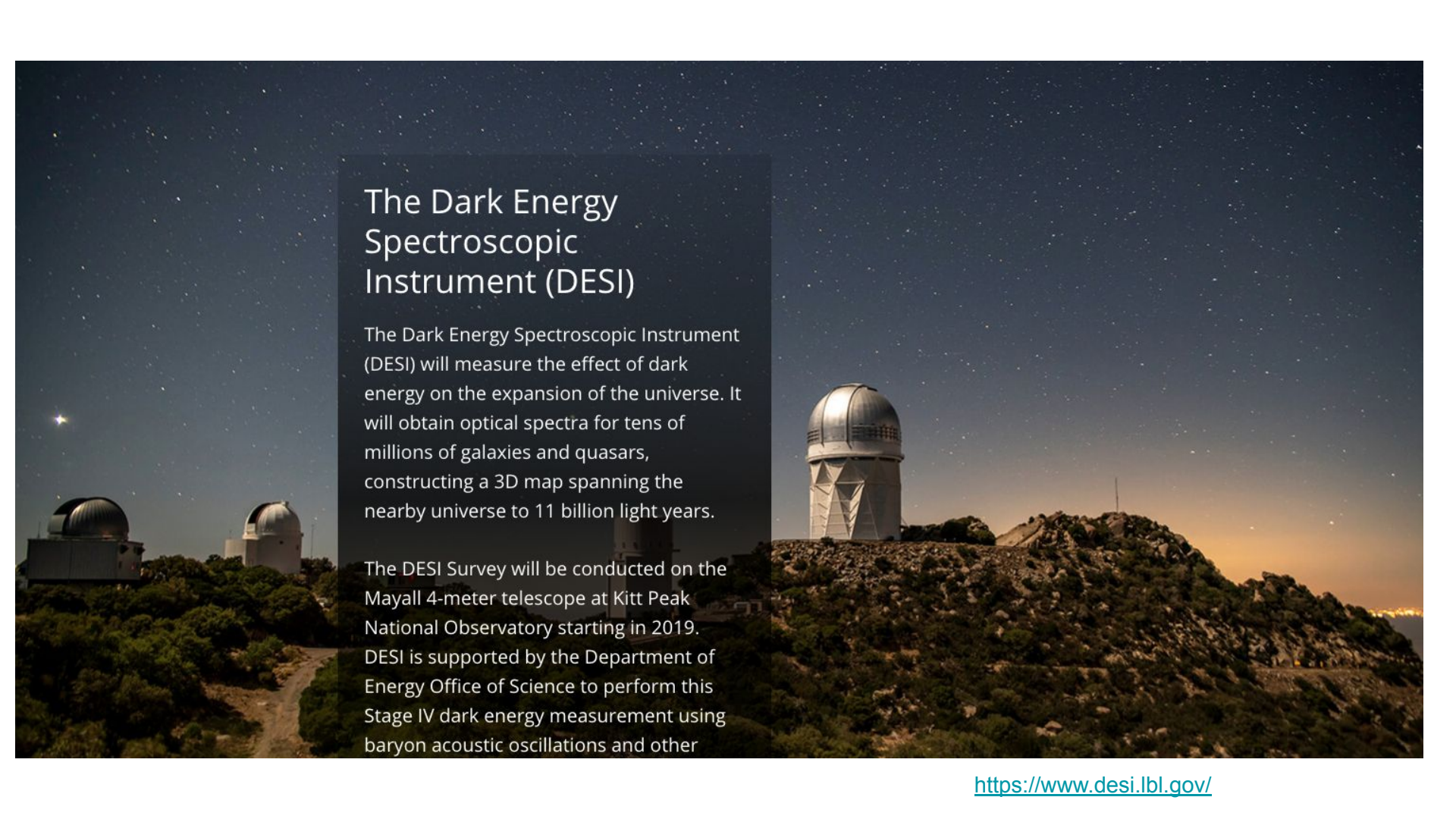


The final calibrated spectrum of DELS J003836.10-152723.6. Credit: Wang et al., 2018.









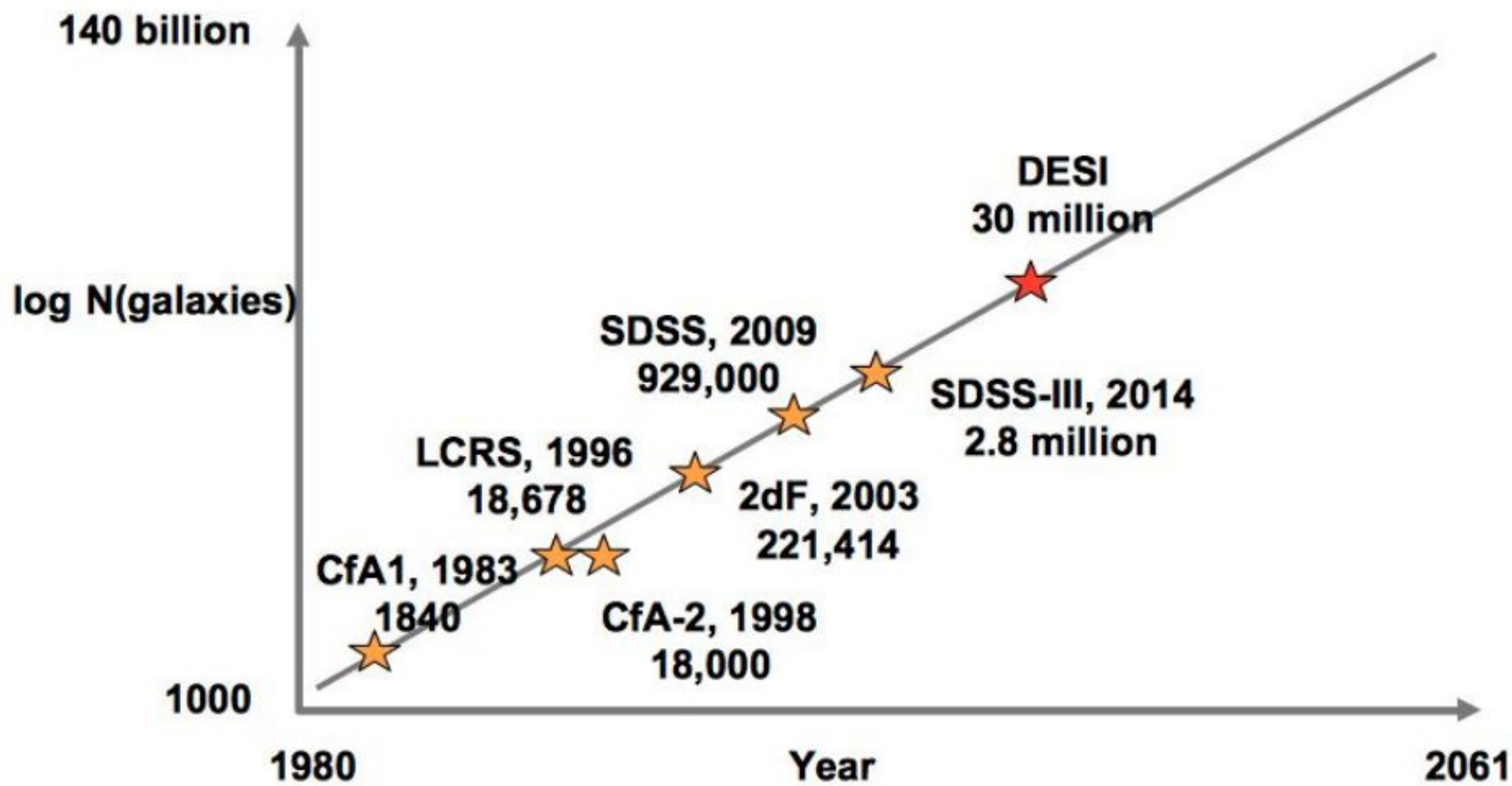
The Dark Energy Spectroscopic Instrument (DESI)

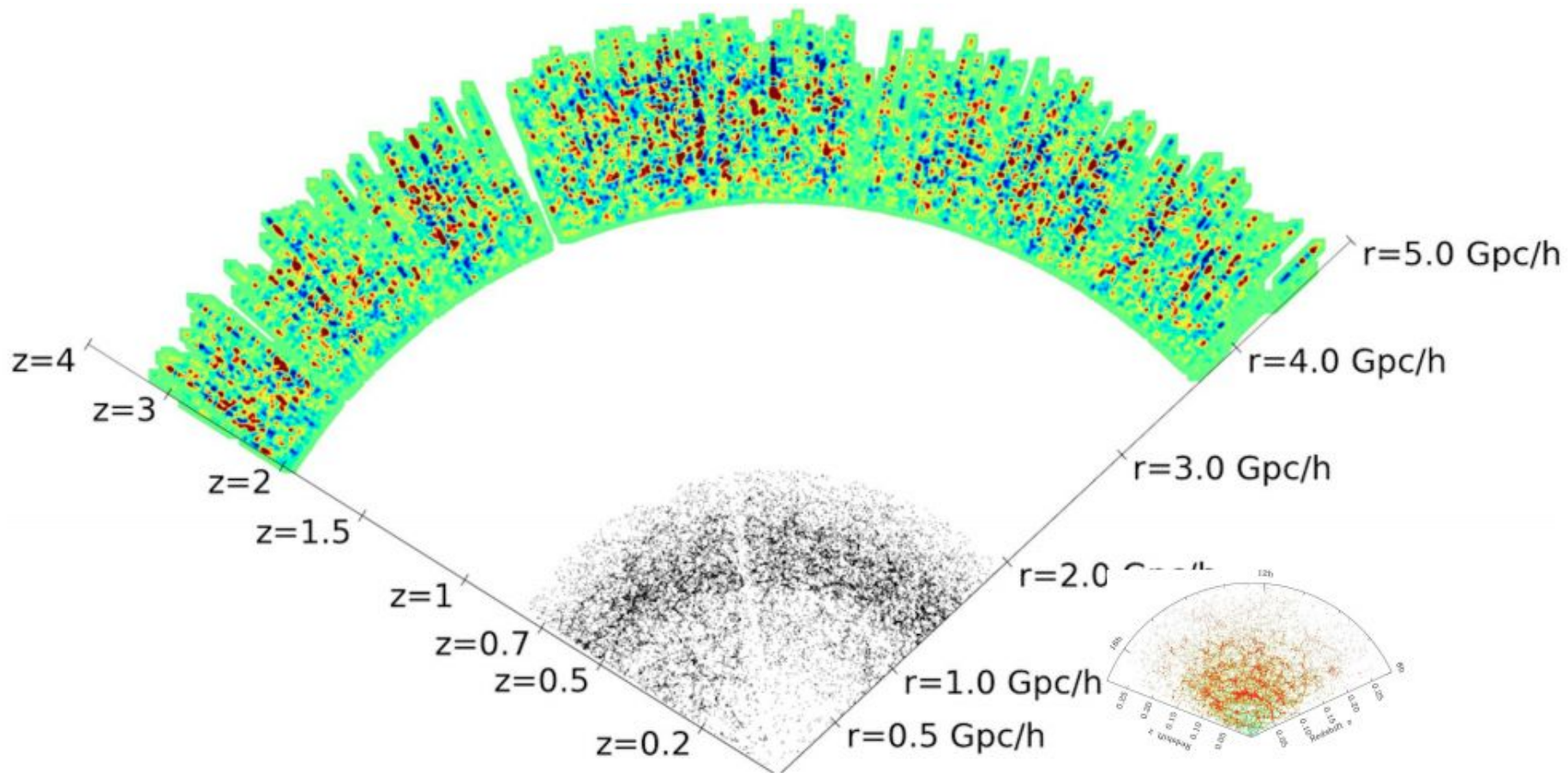
The Dark Energy Spectroscopic Instrument (DESI) will measure the effect of dark energy on the expansion of the universe. It will obtain optical spectra for tens of millions of galaxies and quasars, constructing a 3D map spanning the nearby universe to 11 billion light years.

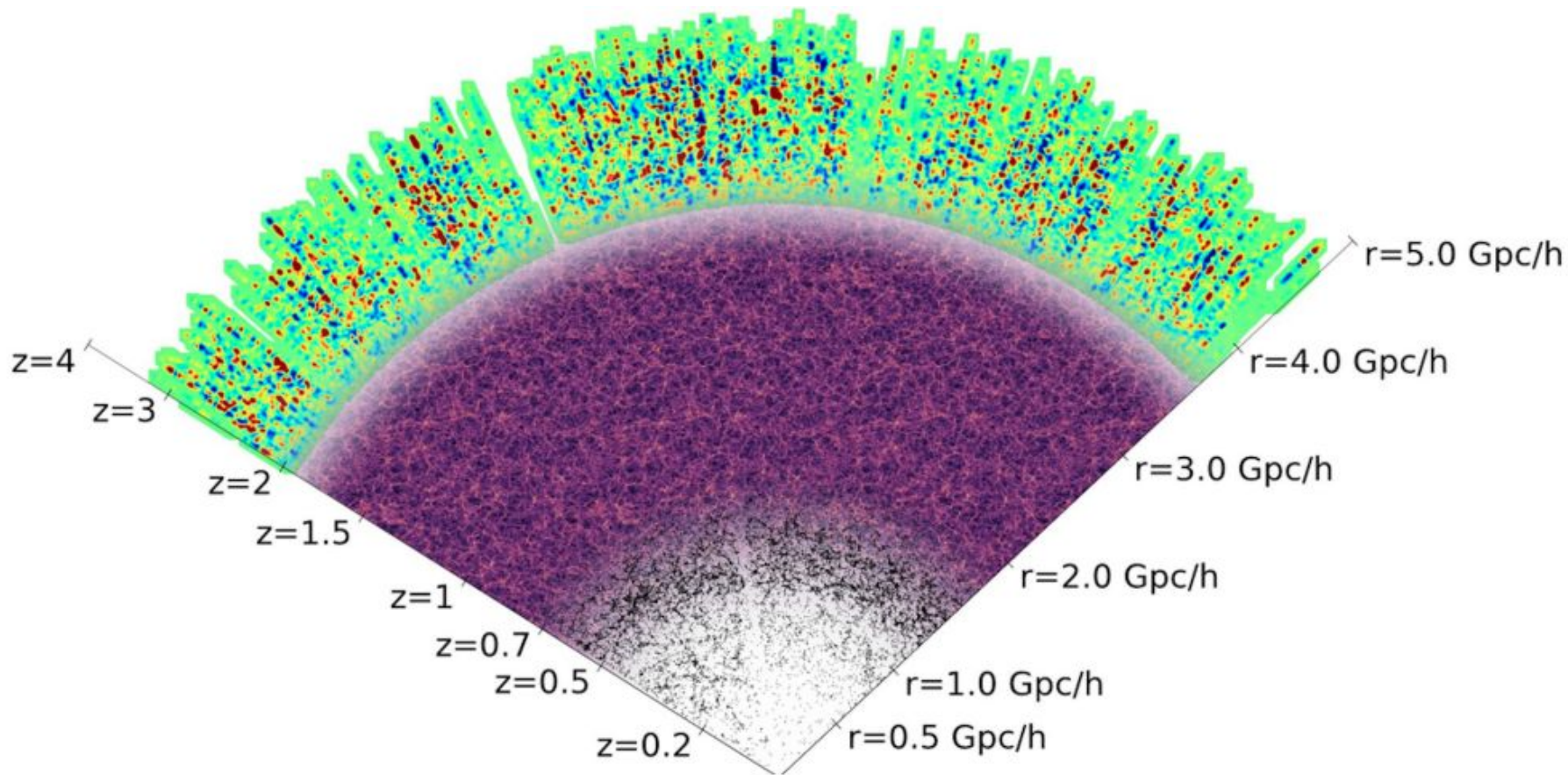
The DESI Survey will be conducted on the Mayall 4-meter telescope at Kitt Peak National Observatory starting in 2019. DESI is supported by the Department of Energy Office of Science to perform this Stage IV dark energy measurement using baryon acoustic oscillations and other



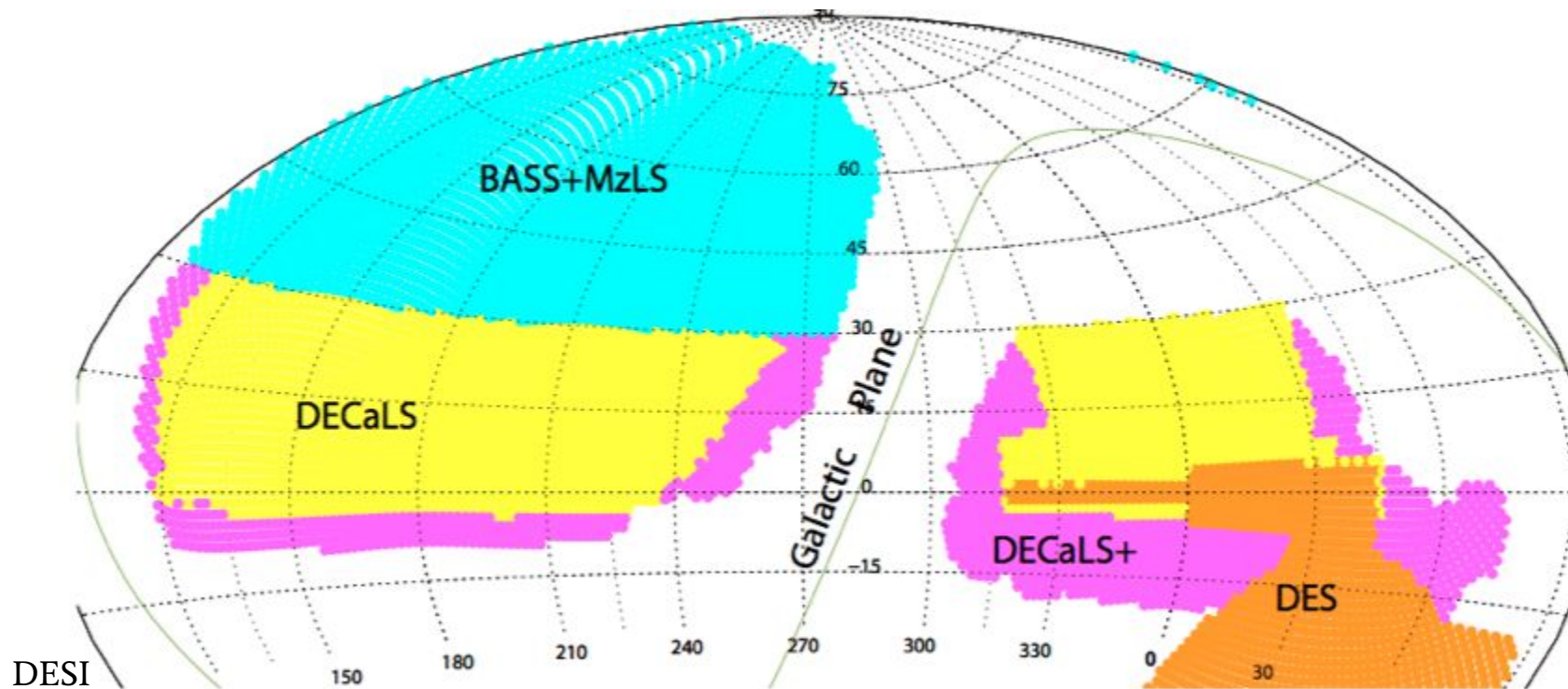








DESI observará un tercio de la esfera celeste



The DESI Experiment Part I: Science, Targeting, and Survey Design

DESI Collaboration: Amir Aghamousa⁷³, Jessica Aguilar⁷⁶, Steve Ahlen⁸⁵, Shadab Alam^{41,59}, Lori E. Allen⁸¹, Carlos Allende Prieto⁶⁴, James Annis⁵², Stephen Bailey⁷⁶, Christophe Balland⁸⁸, Otger Ballester⁵⁷, Charles Baltay⁸⁴, Lucas Beaufore⁴⁵, Chris Bebek⁷⁶, Timothy C. Beers³⁹, Eric F. Bell²⁸, Jos Luis Bernal⁶⁶, Robert Besuner⁸⁹, Florian Beutler⁶², Chris Blake¹⁵, Hannes Bleuler⁵⁰, Michael Blomqvist², Robert Blum⁸¹, Adam S. Bolton^{35,81}, Cesar Briceno¹⁸, David Brooks³³, Joel R. Brownstein³⁵, Elizabeth Buckley-Geer⁵², Angela Burden⁹, Etienne Burtin¹², Nicolas G. Busca⁷, Robert N. Cahn⁷⁶, Yan-Chuan Cai⁵⁹, Laia Cardiel-Sas⁵⁷, Raymond G. Carlberg²³, Pierre-Henri Carton¹², Ricard Casas⁵⁶, Francisco J. Castander⁵⁶, Jorge L. Cervantes-Cota¹¹, Todd M. Claybaugh⁷⁶, Madeline Close¹⁴, Carl T. Coker²⁶, Shaun Cole⁶⁰, Johan Comparat⁶⁷, Andrew P. Cooper⁶⁰, M.-C. Cousinou⁴, Martin Crocce⁵⁶, Jean-Gabriel Cuby², Daniel P. Cunningham¹, Tamara M. Davis⁸⁶, Kyle S. Dawson³⁵, Axel de la Macorra⁶⁸, Juan De Vicente¹⁹, Timothée Delubac⁷⁴, Mark Derwent²⁶, Arjun Dey⁸¹, Govinda Dhungana⁴⁴, Zhejie Ding³¹, Peter Doel³³, Yutong T. Duan⁸⁵, Anne Ealet⁴, Jerry Edelstein⁸⁹, Sarah Eftekharzadeh³², Daniel I. Eisenstein⁵³, Ann Elliott⁴⁵, Stéphanie EscOFFER⁴, Matthew Evatt⁸¹, Debrah Escobedo⁷⁶

13 Dec 2016

¿Cómo entró Uniandes en DESI?



DESI

Ya hay imágenes disponibles al público



RA,Dec = 125.0498, 18.8368, zoom 11

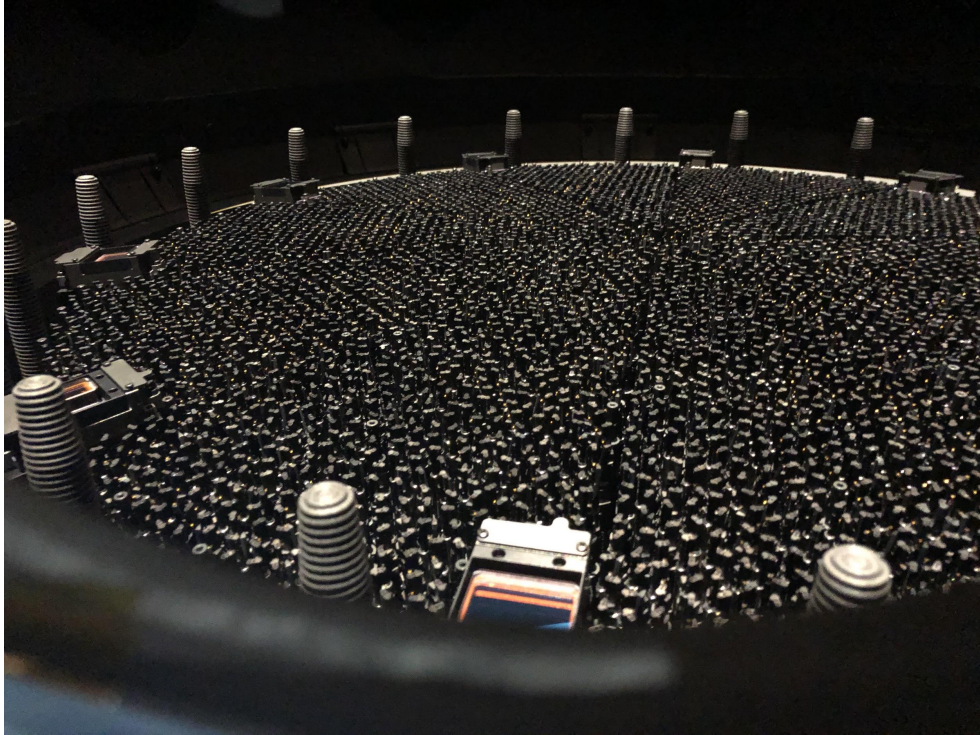
10 arcmin

Jump to object: NGC 5614

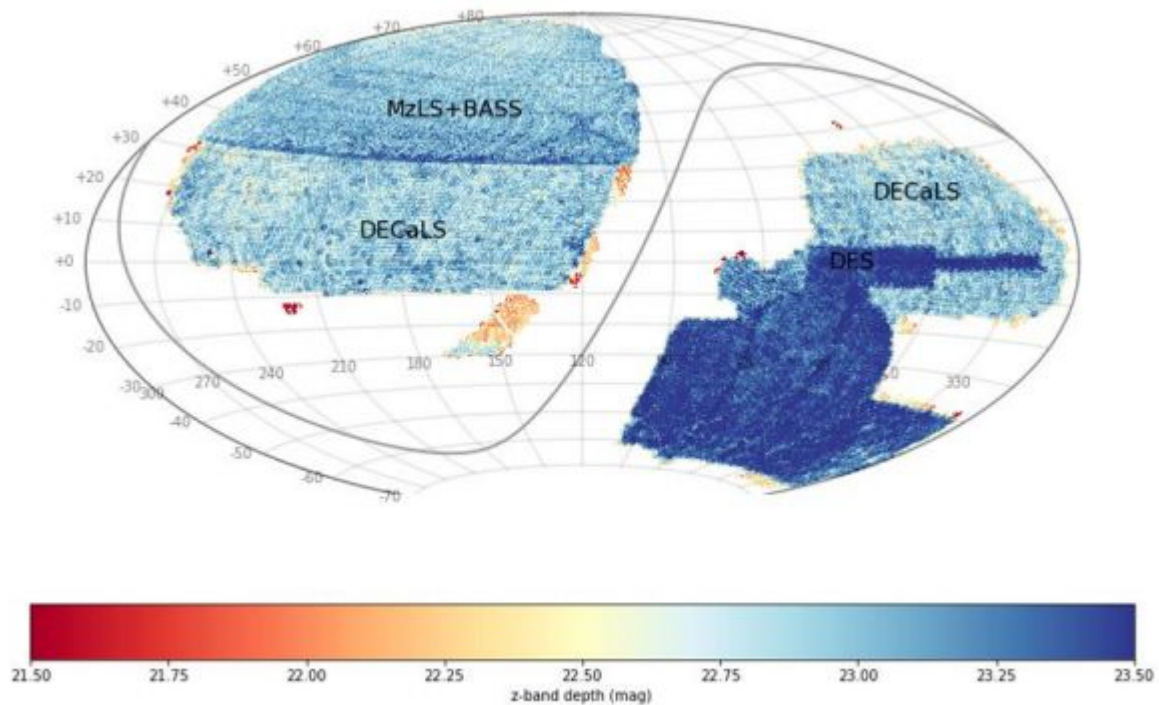
Custom catalog upload (FITS table; RA,Dec,[name]):
Choose File No file chosen Upload

<http://legacysurvey.org/viewer>

- LegacySurvey DR6+DR7 images
- DECaLS DR7 images
 - DECaLS DR7 models
 - DECaLS DR7 residuals
- MzLS+BASS DR6 images
 - MzLS+BASS DR6 models
 - MzLS+BASS DR6 residuals
- DECaLS DR5 images
- MzLS+BASS DR4 images
- DECaPS images
- unWISE W1/W2 NEO4
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 - VLASS images
 - GALEX
 - WISE 12-micron dust map
 - SFD dust map
 - Halpna map
- DECaLS Bricks
- DECaLS DR7 CCDs
- SDSS CCDs
- unWISE tiles
- DECaLS DR7 Exposures
- DECaLS DR7 catalog
- Gaia DR2 catalog
- + Other catalogs
- + Spectroscopy
- + DESI targets
- DESI Footprint



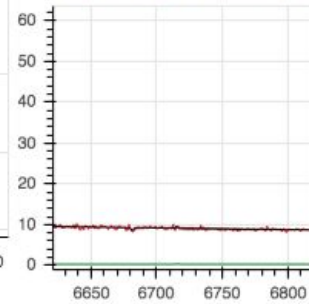
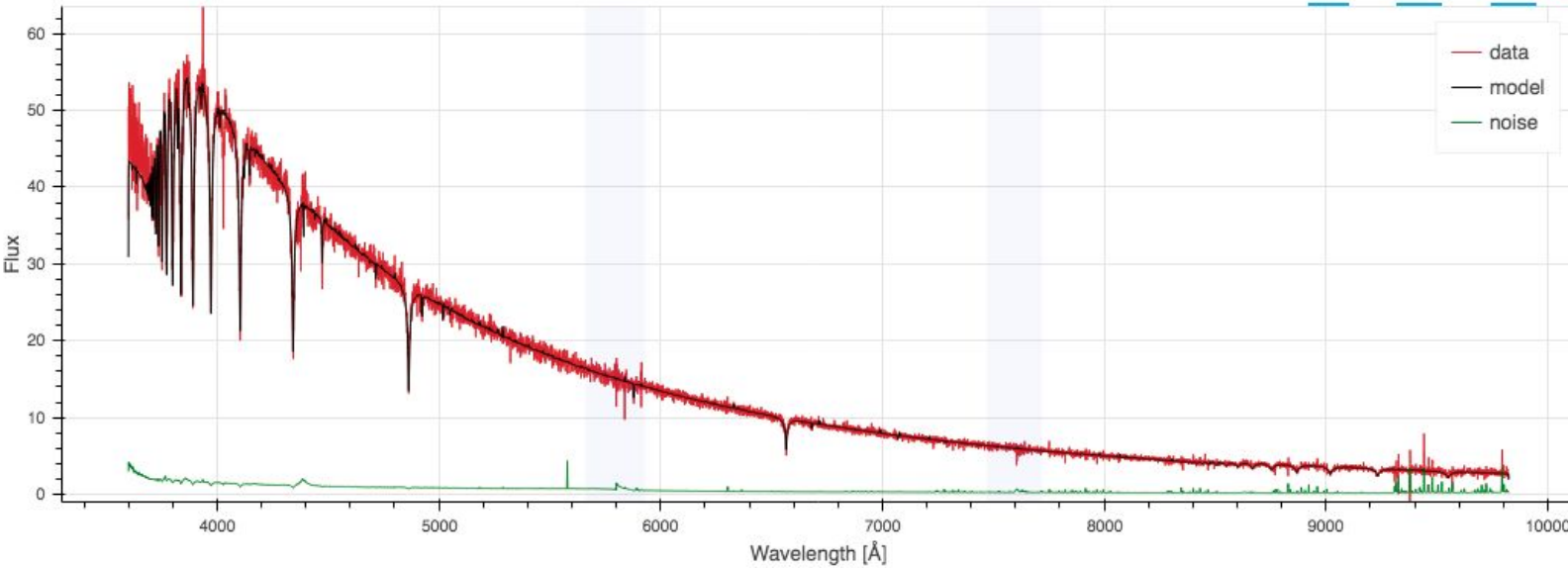
DESI



Default plan

```
2021-02-05
  noon 12:00
12 deg dusk 18:58
18 deg dusk 19:27
  moonrise 02:45
18 deg dawn 05:53
12 deg dawn 06:21
  moonset 13:18
local  lst  cond  tile  ra  dec  program  fac  tot  split  d/g/b
18:58  54.5  BRIGHT 80628  28.6  5.2  svlbgsms  1.7  910  4x227  1.0/0.0/0.0
19:26  61.4   DARK 80669  38.0  0.5  svlelqgso 1.5 1703  3x567  3.1/0.0/0.0
20:03  70.7   DARK 80673  85.5 -20.2 svlelqgso 2.5 2735  5x547  2.2/0.0/0.0
21:04  85.9   DARK 80675  98.5  44.5 svlelqgso 2.3 2502  5x500  3.1/0.1/0.0
22:00 100.1   DARK 80679 111.0  41.5 svlelqgso 1.5 1687  3x562  0.1/1.0/0.0
22:37 109.4   DARK 80683 116.0  15.5 svlelqgso 1.3 1395  3x465  2.1/0.0/0.0
23:10 117.5   DARK 80685 120.0  34.0 svlelqgso 1.3 1475  3x491  3.2/0.0/0.0
23:43 126.0   DARK 80688 130.7  22.3 svllrgqso 1.2 1357  3x452  3.1/0.0/0.0
00:15 133.9   DARK 80693 135.0  83.0 svlelqgso 2.1 2287  4x571  3.0/0.1/0.0
01:05 146.4   DARK 80651 145.0  32.4 svlbgsms  1.1  162  2x300  1.0/0.0/0.1
01:21 150.5   DARK 80742 150.1   3.0 svlbgsms  1.3  195  2x300  0.0/0.1/0.0
01:37 154.5   DARK 80700 159.0  32.4 svllrgqso 1.1 1202  3x400  2.3/0.0/0.0
02:06 161.7   DARK 80701 162.5 -27.0 svlelqgso 3.5 3778  7x539  0.0/2.0/0.0
03:30 182.8   GRAY 80707 192.9  27.1 svlelqgso 1.1 1748  3x582  1.1/2.0/0.0
04:08 192.4   GRAY 80709 198.0   7.0 svlelqgso 1.3 2224  4x556  0.0/0.0/0.0
04:57 204.7   GRAY 80711 213.0  51.5 svlelqgso 1.2 1909  4x477  0.1/1.0/0.0
05:41 215.7  BRIGHT 80733 199.1  18.3 svlbgsms  1.1  568  2x284  0.0/0.0/0.0
05:57 219.5  BRIGHT 80732 198.0   0.0 svlbgsms  1.5  802  2x401  0.0/0.0/0.0
06:16 224.4  BRIGHT 80735 250.4  37.0 svlbgsms  1.2  640  3x213  0.0/0.0/2.0
```

SVO_WD_tile68002_night20200315_1



Target ID	Target class	mag_G	mag_R	mag_Z	mag_W1	mag_W2
35185935947662689	STD_GAIA STD_DITHER SVO_MW	18.00	18.43	18.98	0.00	0.00

Reset X-Y range

Spectrum: 0

VI optional indications :

Bad redshift fit
 Bad spectype fit
 Bad spectrum

VI redshift :

VI spectype :

Pipeline fit :

SPECTYPE	Z	ZERR	ZWARN	DeltaChi2
STAR	0.0003	0.0000	0	33731.9

Redshift rough tuning: 0

Redshift value:

Machine learning no supervisado

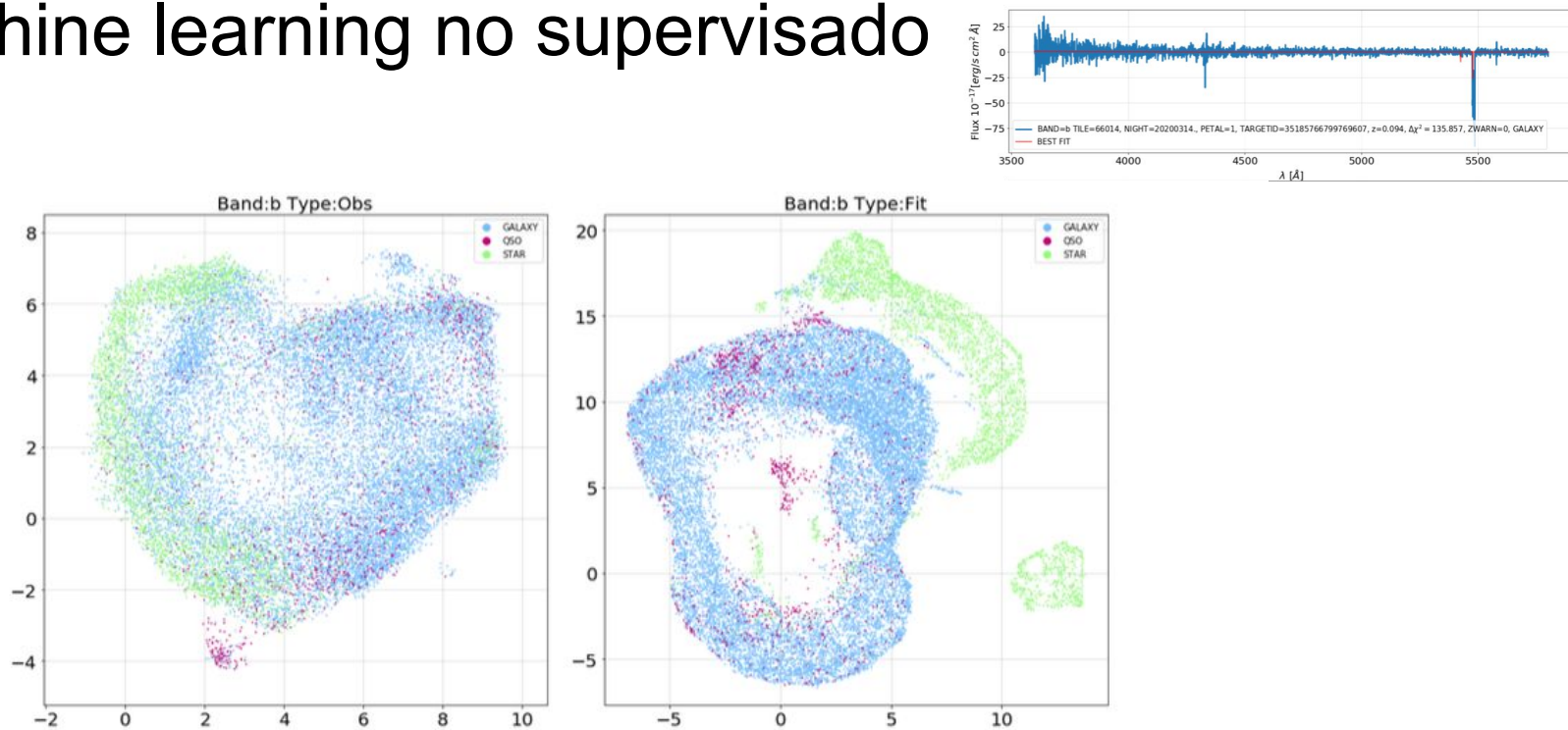


Figure 1: (Left) UMAP projection for the observational spectra and (right) for the fitted spectra in the B band.