



Alla ricerca di buchi neri classificando le galassie

Anna Feltre

<https://github.com/feltre/CPlT3>



Hubble Deep Field

TELESCOPIO
SPAZIALE HUBBLE

1996



Hubble Deep Field

ST Scl OPO January 15, 1996 R. Williams and the HDF Team (ST Scl) and NASA

HST WFPC2

Hubble Ultra Deep Field

2004





2017



Domande aperte

Come si formano le galassie?

Come differiscono le galassie vicine da quelle lontane?

Come si formano i buchi neri super-massicci?

Che effetto hanno i buchi neri sulla galassia che li ospita?



Cosa vedremo oggi

<https://github.com/feltre/CPIT3>

Cos'e' una galassia

Diversi tipi di galassie e loro classificazione

Come si osservano le galassie

Come si identifica un buco nero "attivo" all'interno delle galassie

Phd Students and Postdoctoral Fellows
2012 - European Southern Observatory



Monaco



Padova



La Specola Padova -
Dipartimento di Fisica e Astronomia





Champ de Mars - Parigi, 14 Luglio 2014



Quai Courmont - Lione, April e2018





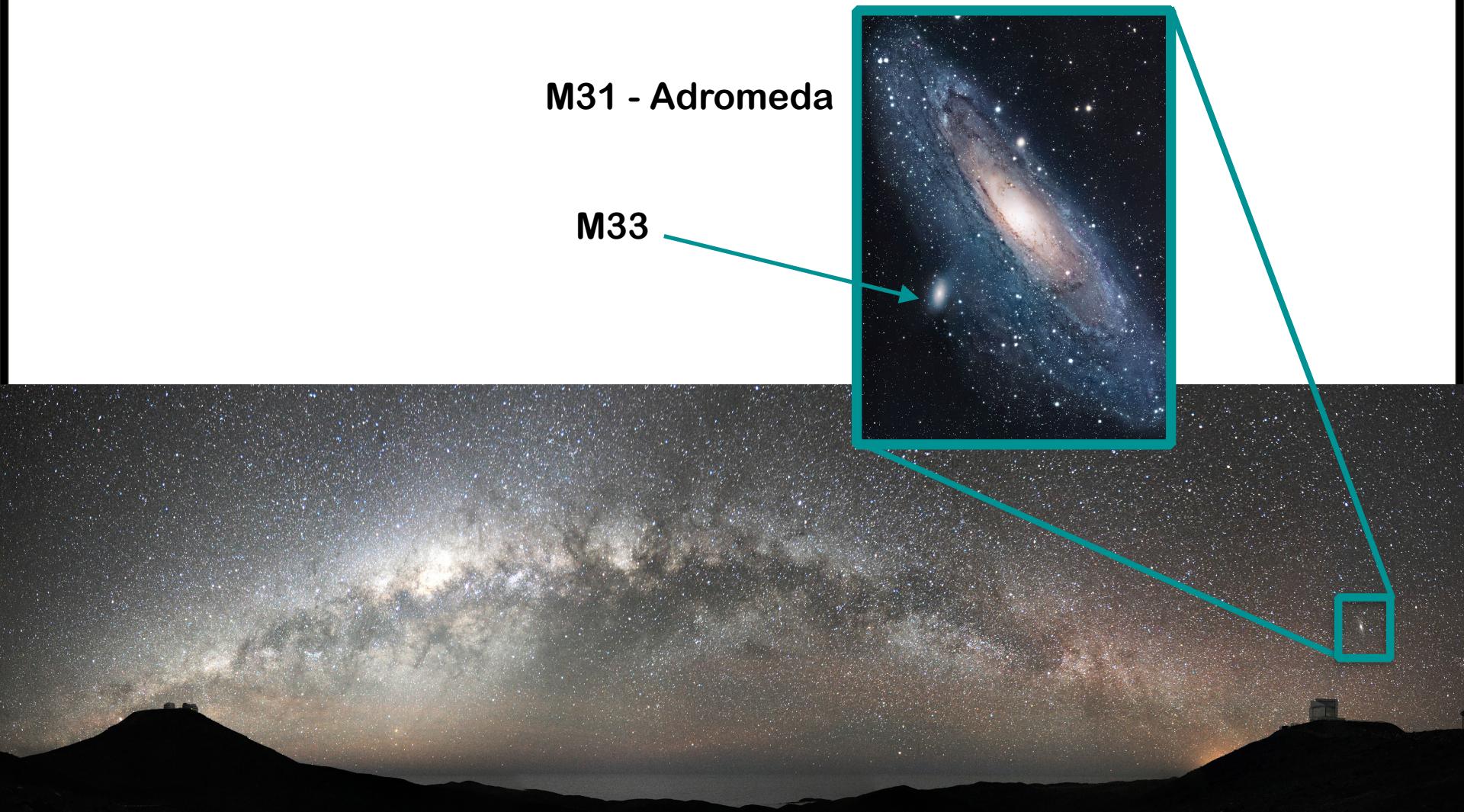


SISSA



Matematica
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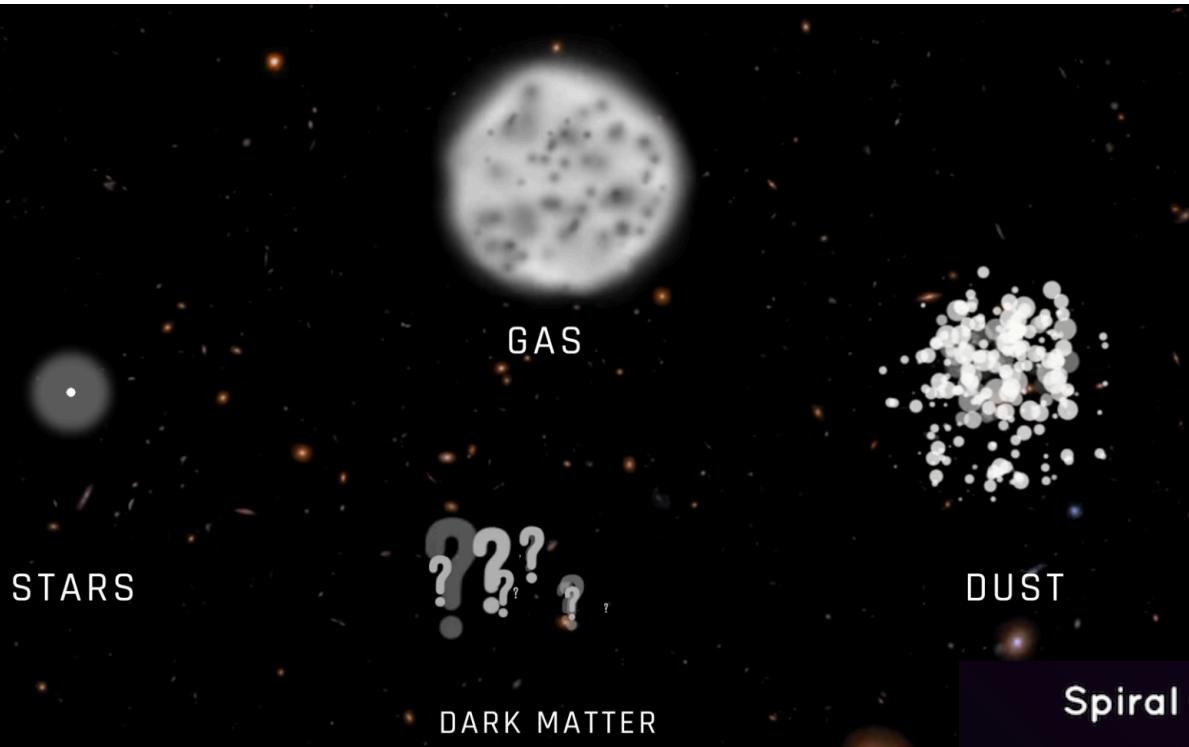
Oltre la Via Lattea



M31 - Adromeda

M33

Cos'è una galassia ?



Spiral Galaxy

Elliptical Galaxy



Irregular Galaxy

Esercizio 1

...classifichiamo le galassie!



<https://www.zooniverse.org/projects/zookeeper/galaxy-zoo>

Get started ↓

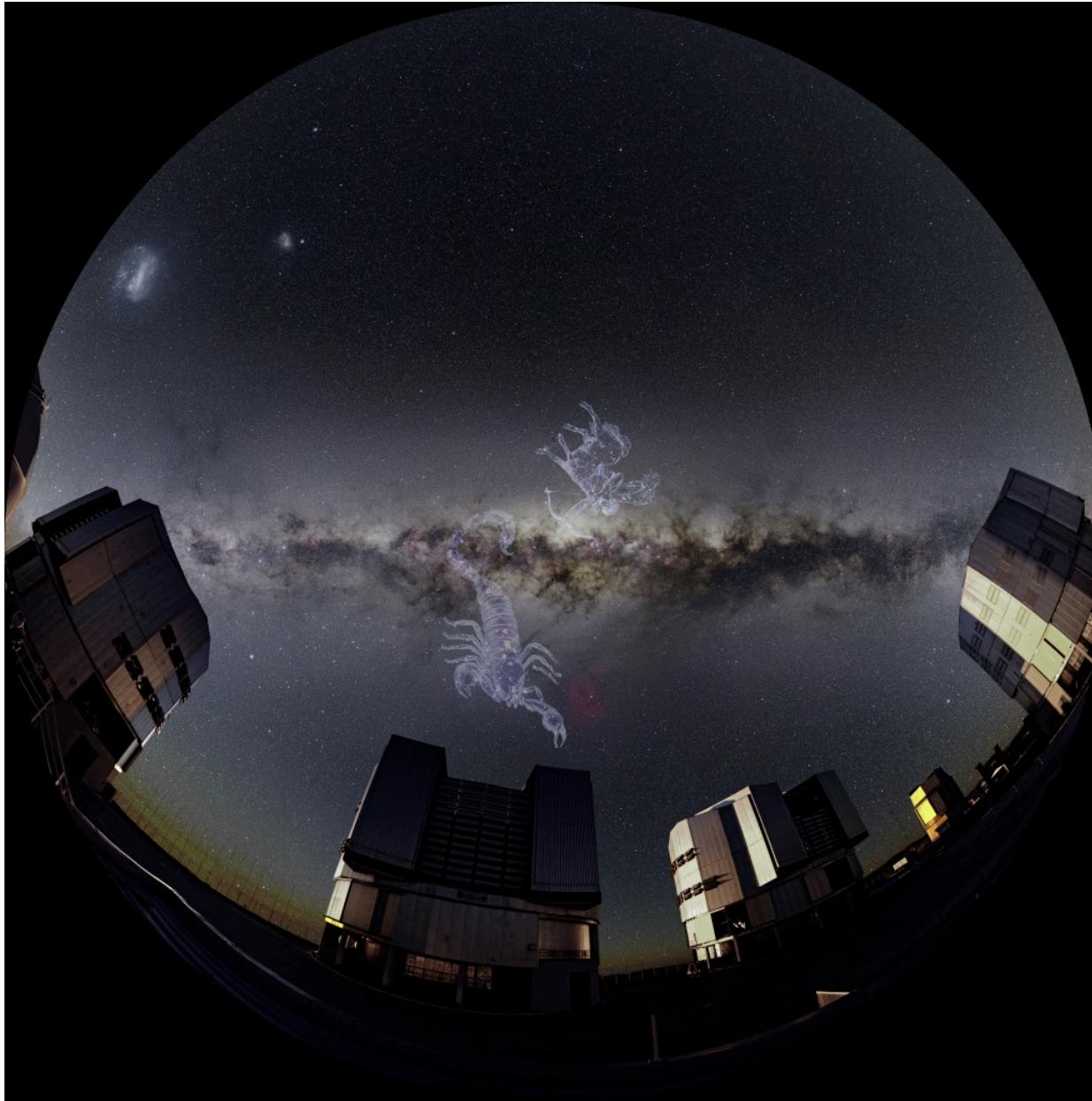
Choose 'Enhanced' to see those galaxies we most need your help with. Choose 'Classic' for a random selection.

Classic

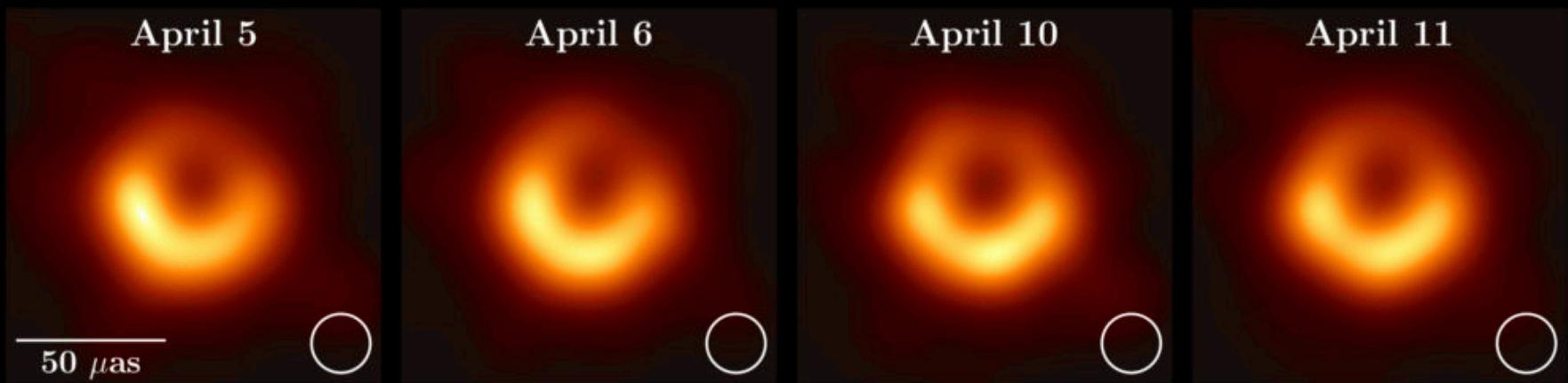
Enhanced



Cosa c'è al centro delle galassie?

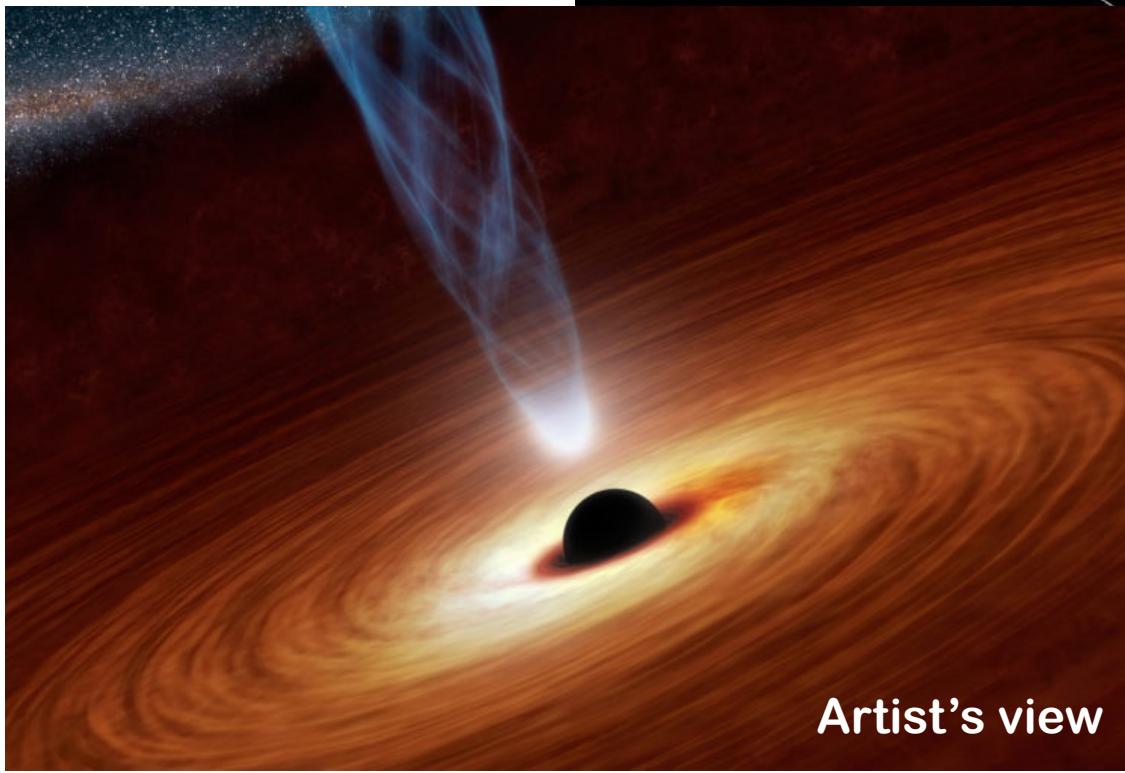


Buchi neri super massicci

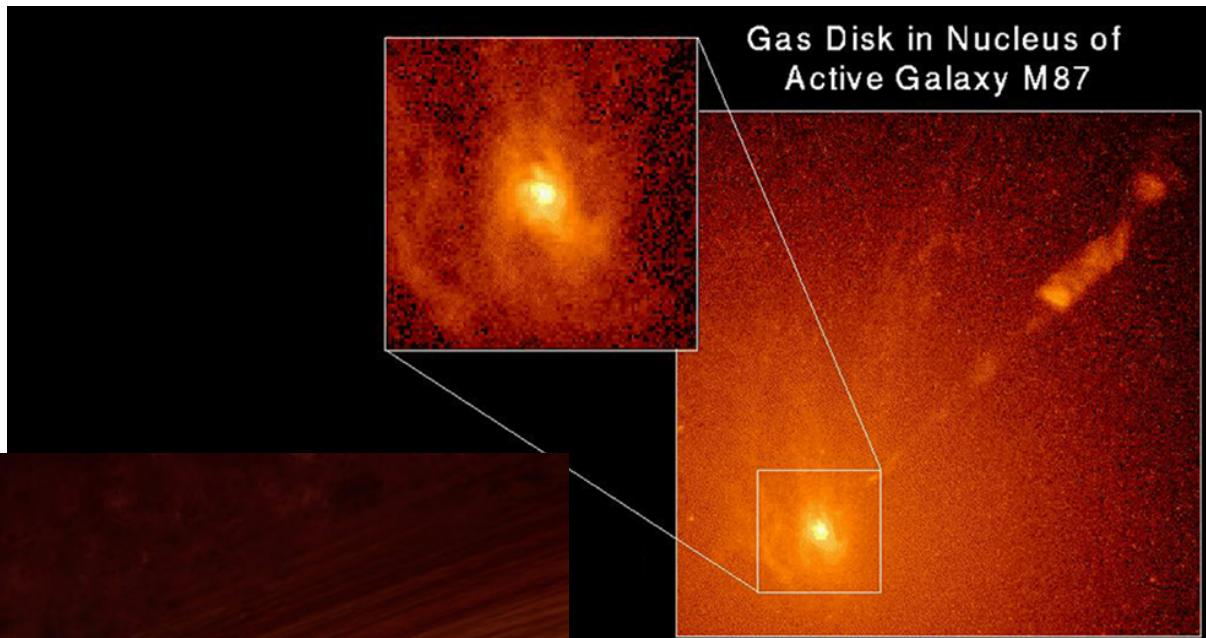


Observations from the Event Horizon Telescope of the supermassive black hole at the center of the elliptical galaxy M87, for four different days. [EHT Collaboration et al 2019]

Nuclei Galattici Attivi / Quasars



Artist's view



Gas Disk in Nucleus of
Active Galaxy M87

Esercizio 2

... selezioniamo i nuclei galattici attivi!

<http://skyserver.sdss.org/dr15/en/tools/explore/>

1

DR15

Explore Home

Search

Imaging Summary

FITS

Finding chart

Other Observations

2

Name: ACO 2255

RA/Dec: 29.068716 / 14.694918

ObjID: 1237668296598749280

Find SpecO

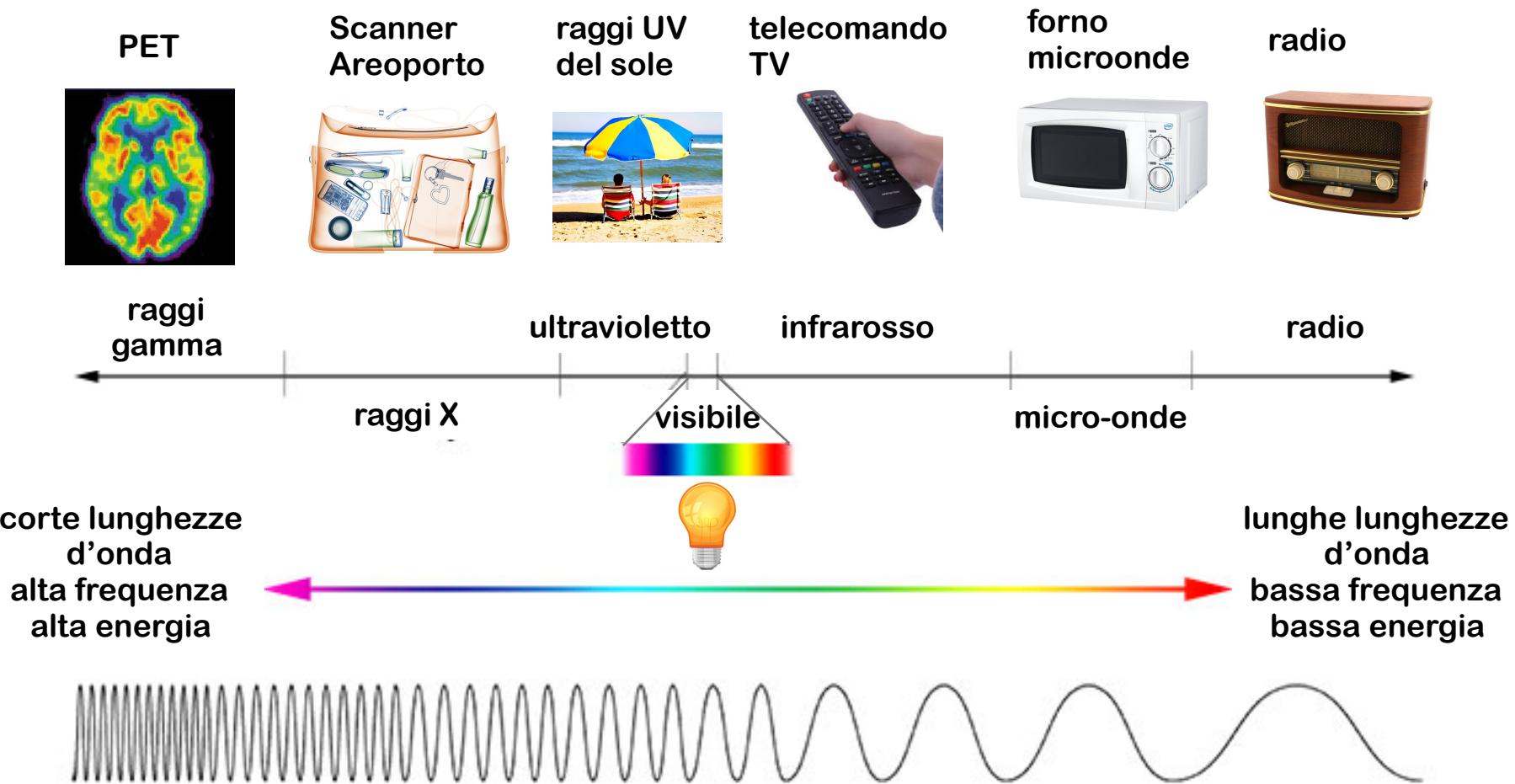
Go

SDSS J151806.13+424445.0

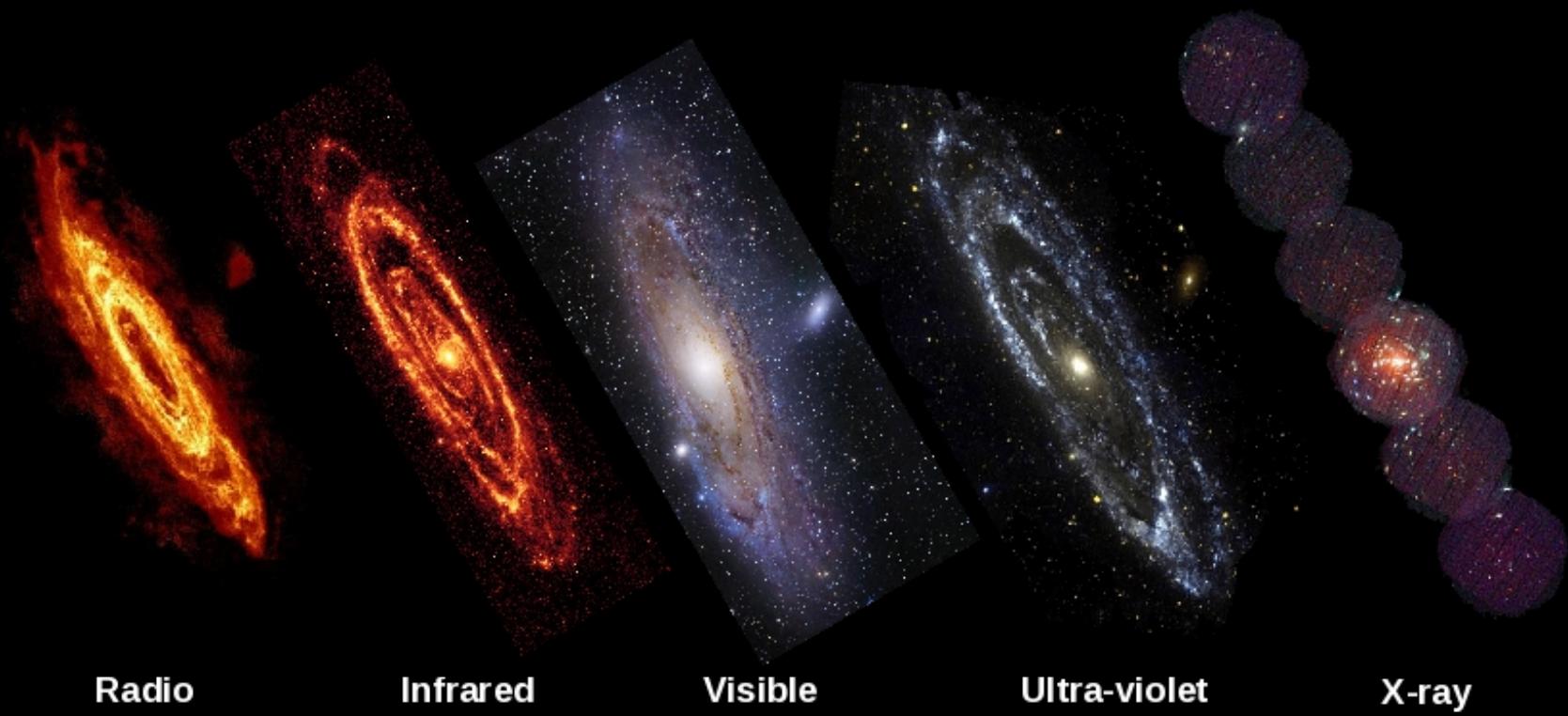
Look up common name

This object was also observed in MaNGA

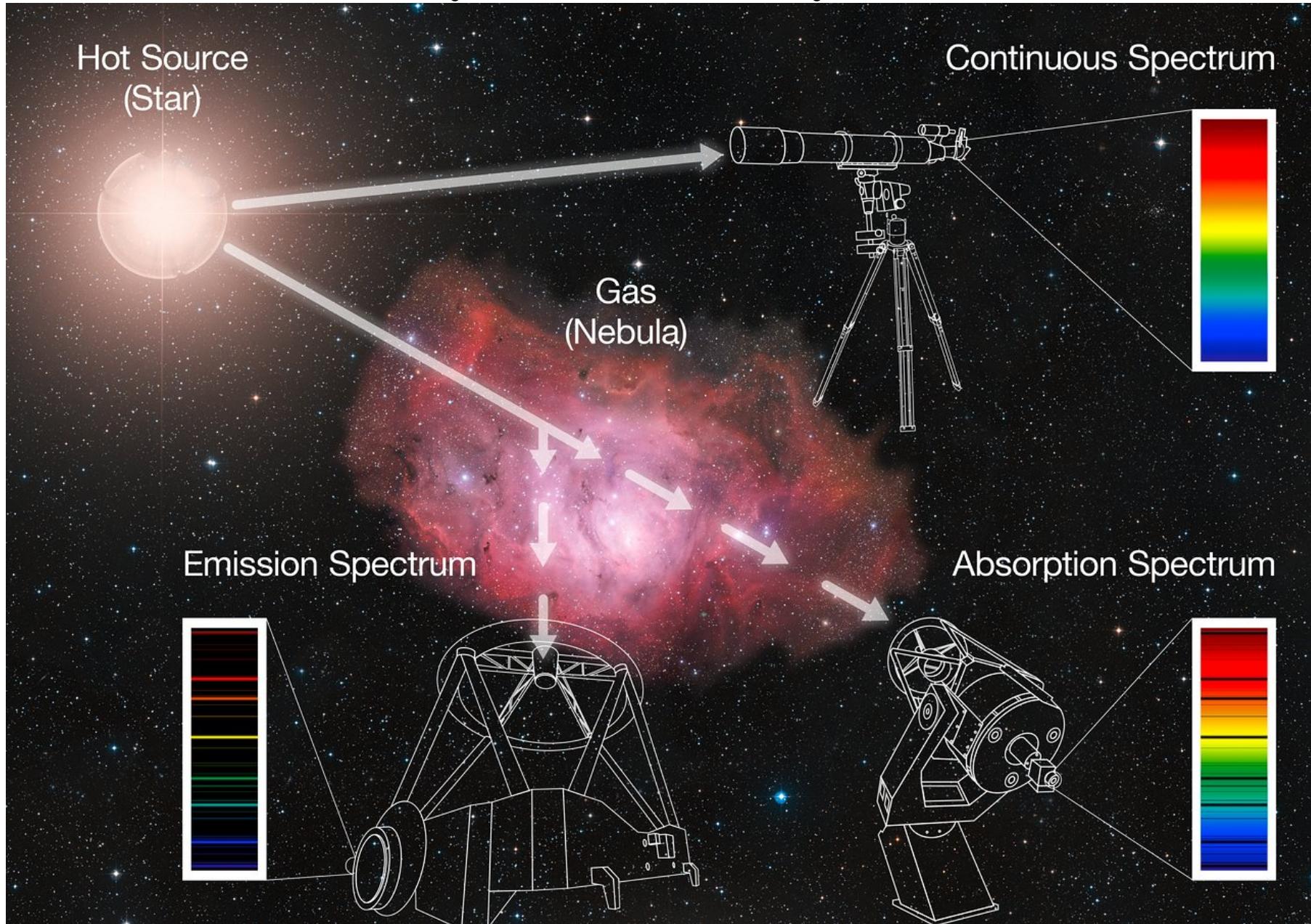
Spettro elettromagnetico



Osservare a diverse frequenze



Spettroscopia



Esercizio 2

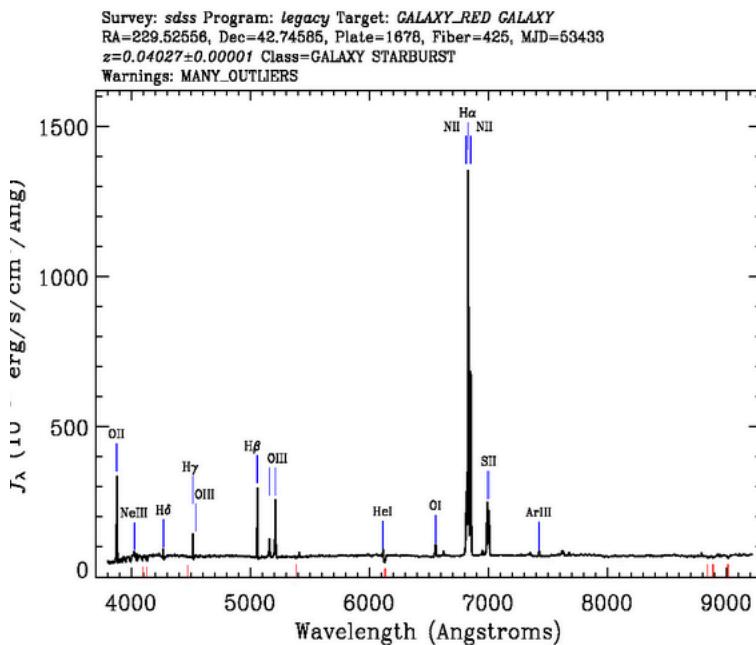
... selezioniamo i nuclei galattici attivi!

3



Optical Spectra SpecObjID = 1889376924388583424

[Interactive spectrum](#)



Spectrograph	SDSS
class	GALAXY
Redshift (z)	0.040
Redshift error	0.00001
Redshift flags	MANY_OUTLIERS
survey	sdss
programname	legacy
primary	1
Other spec	0
sourcetype	GALAXY
Velocity dispersion (km/s)	241.21
veldisp_error	7.496
targeting_flags	GALAXY GALAXY_RED
plate	1678
mjd	53433
fiberid	425

Esercizio 2

... selezioniamo i nuclei galattici attivi!

SCARICA FILE CON RIGHE DI EMISSIONE

FARE CONTO DEI RAPPORTI DI RIGA

INSERIRE NEL CARTELLONE

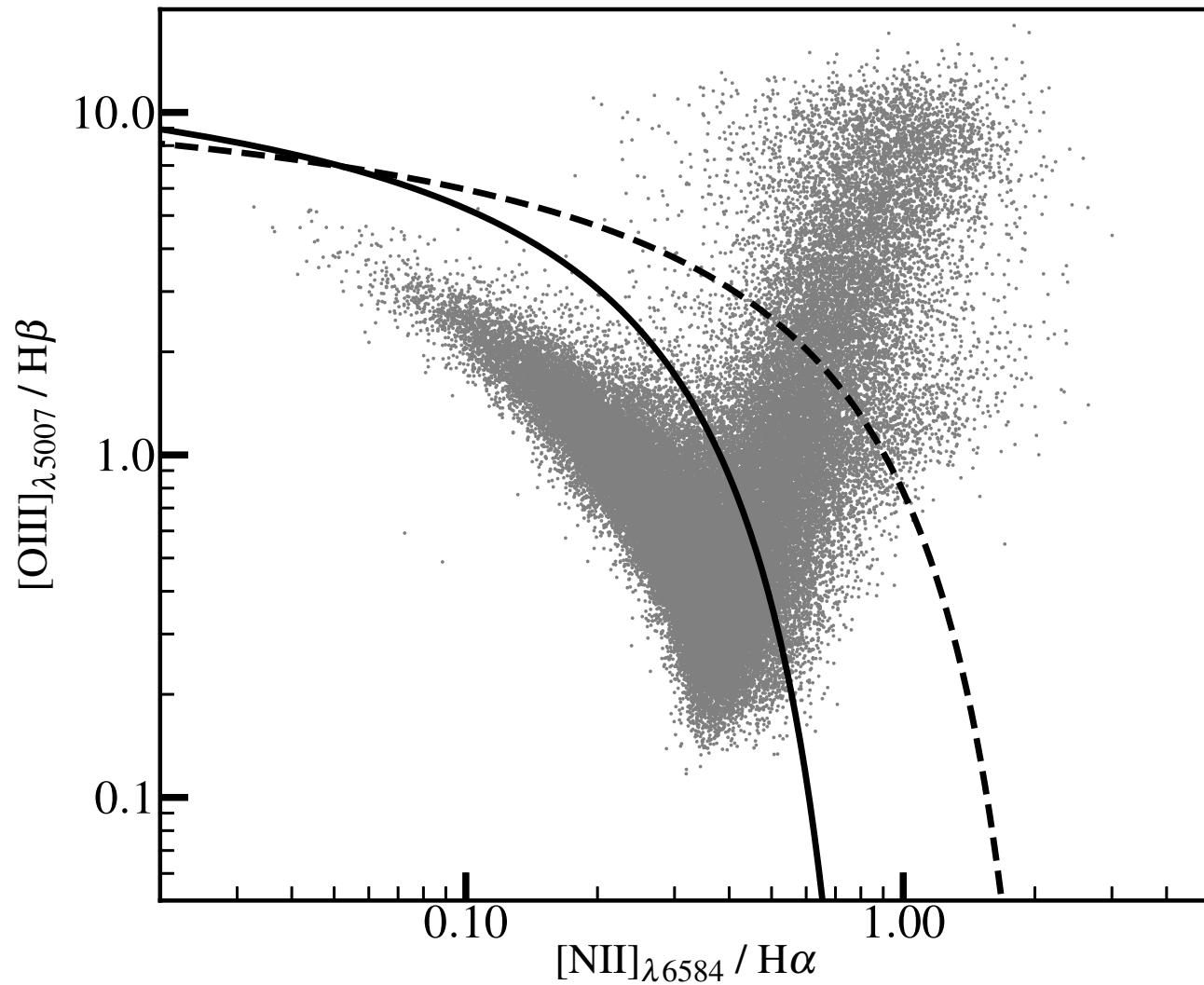
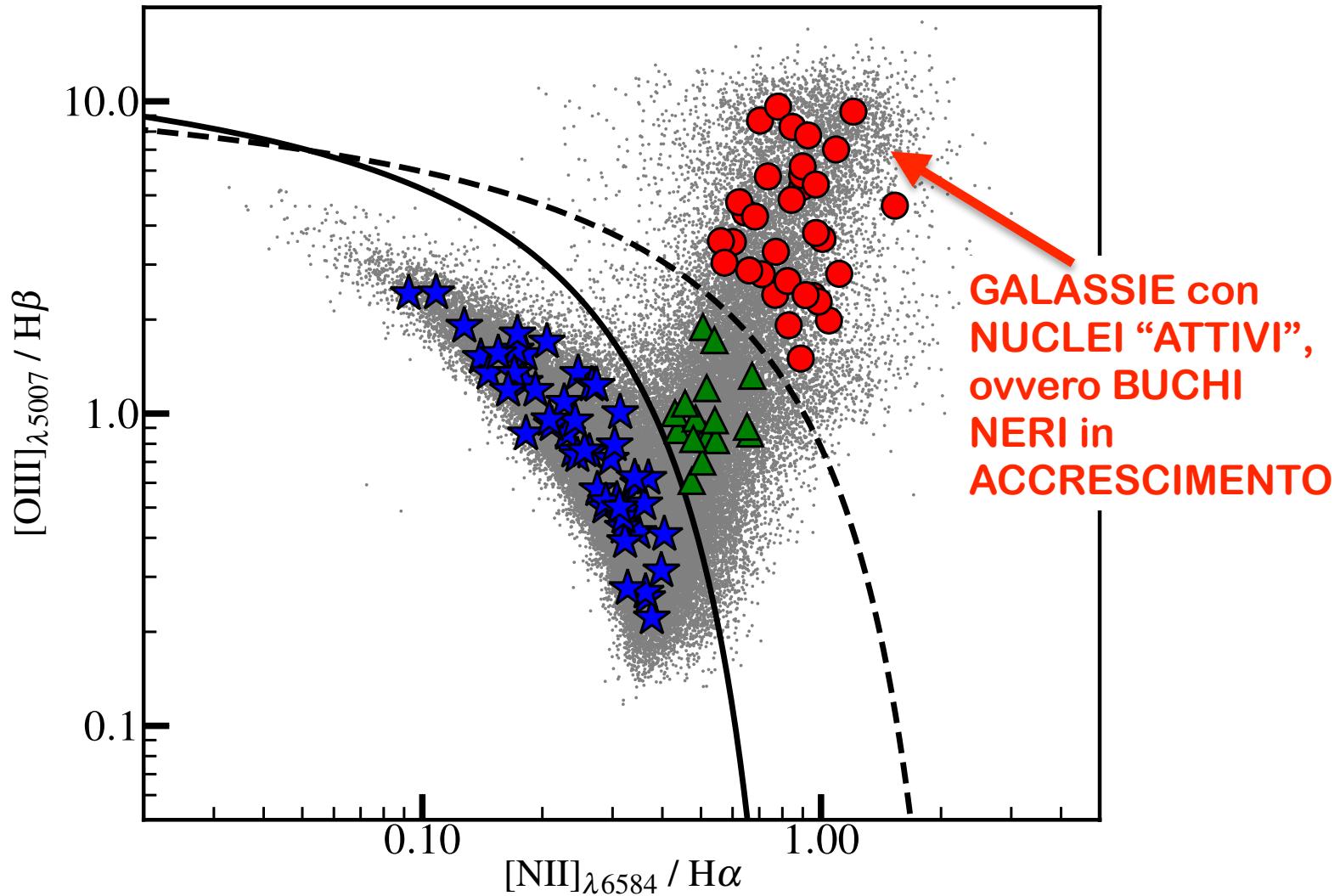
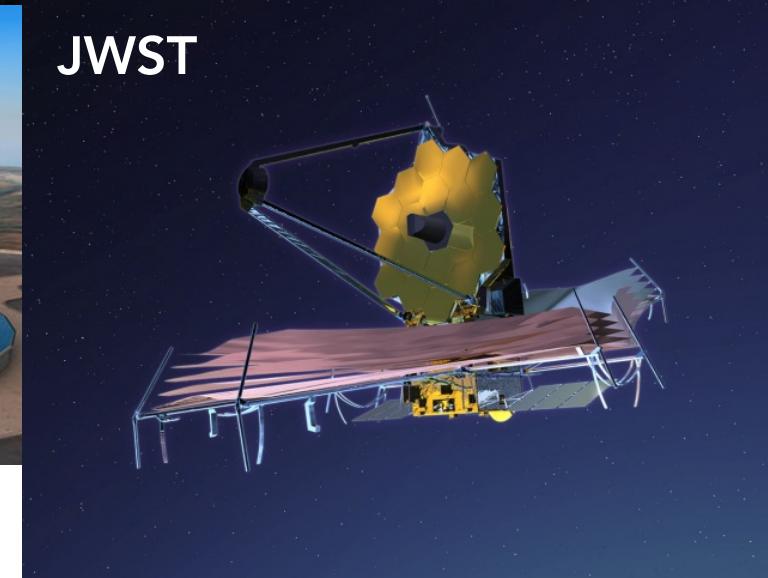
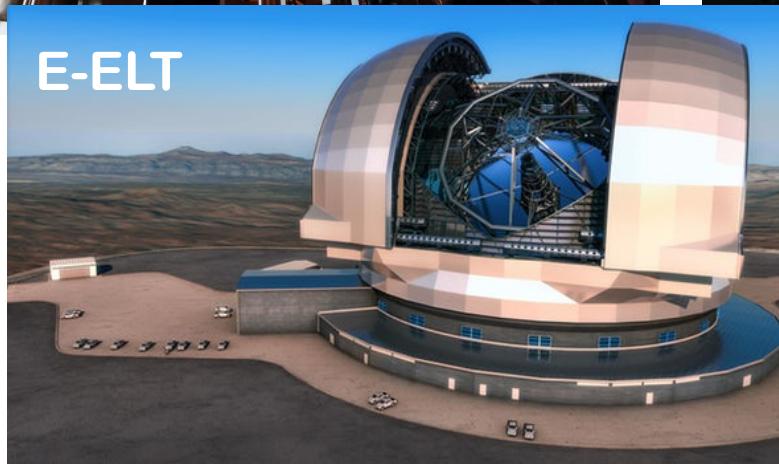


Diagramma diagnostico





www.eso.org



The future is bright!



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24_27
LUGLIO
FIERA MILANO RHO



Thank you!