

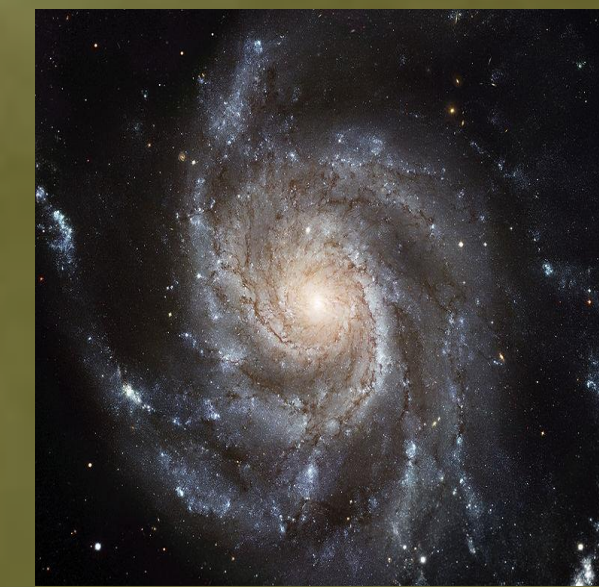
The Presence of Active Galactic Nuclei in Gas-Poor Galaxies

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Abstract

Active Galactic Nuclei in gas-poor galaxies are a phenomena that is currently not well-understood. In theory, the accretion of matter (namely gas and dust) should drive the radio-emitting activity of a super-massive black hole; when a galaxy becomes depleted of these resources, the radio activity should decrease accordingly. We have compiled a list of bright astronomical objects and are currently classifying them according to type, redshift, radio emissions, and spectrum in order to search for a correlation among these gas-poor AGNs.

Types of Objects



Spiral
Messier 101



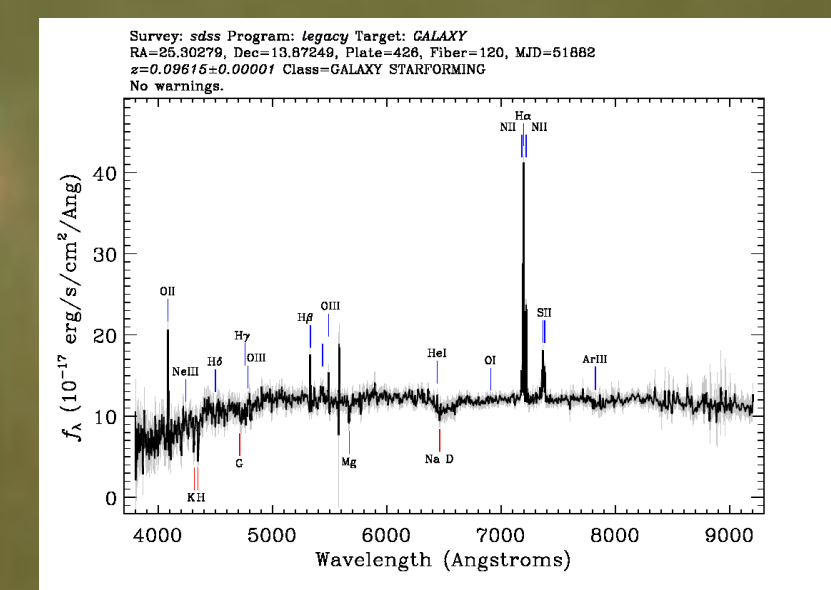
Elliptical
ESO 325



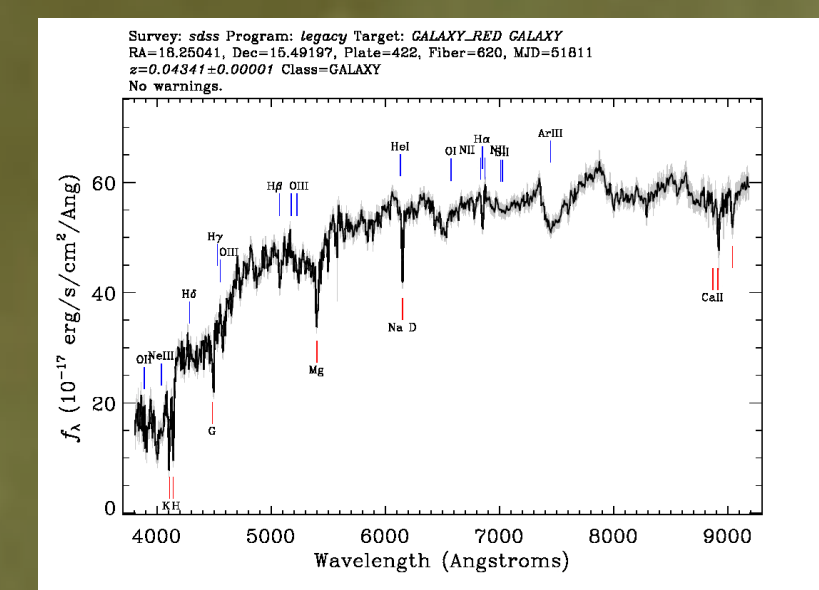
Quasar
MC2 1635



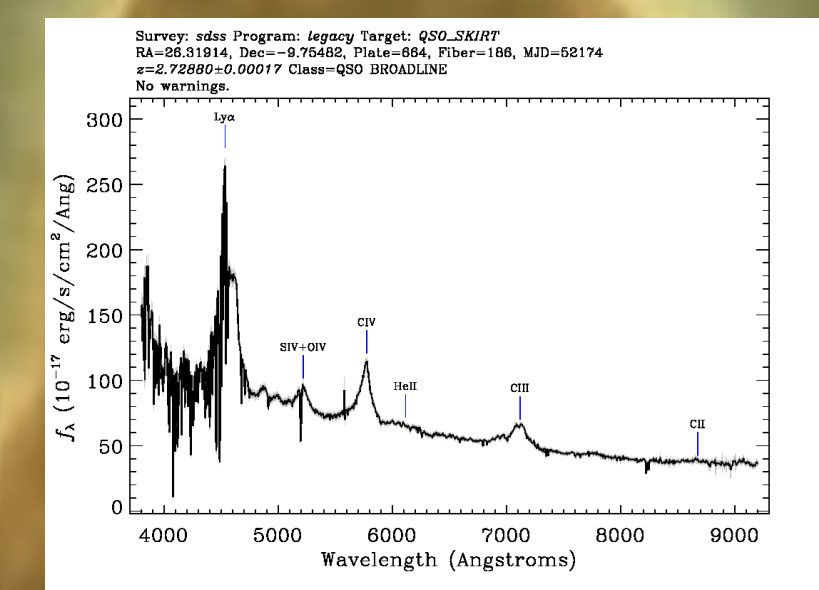
Star



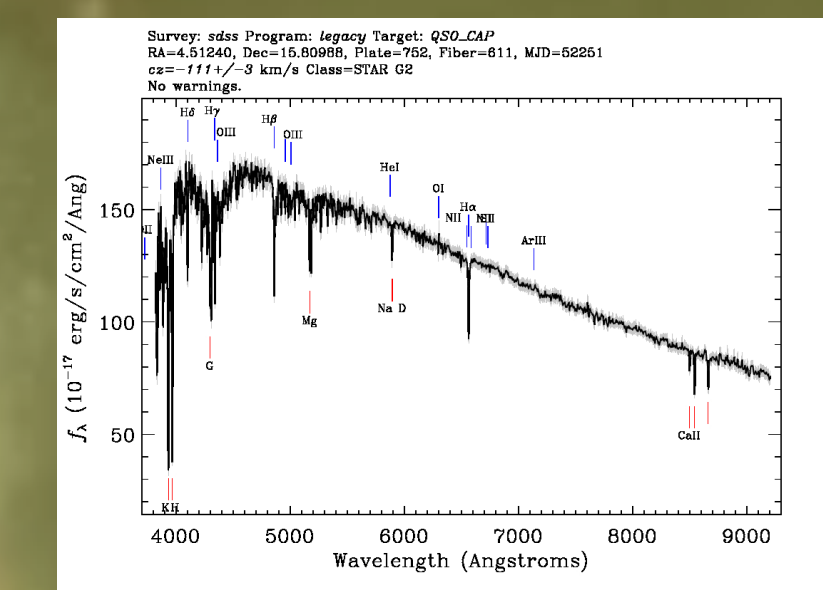
Gas-rich, large H α line



Very little free, hot gas

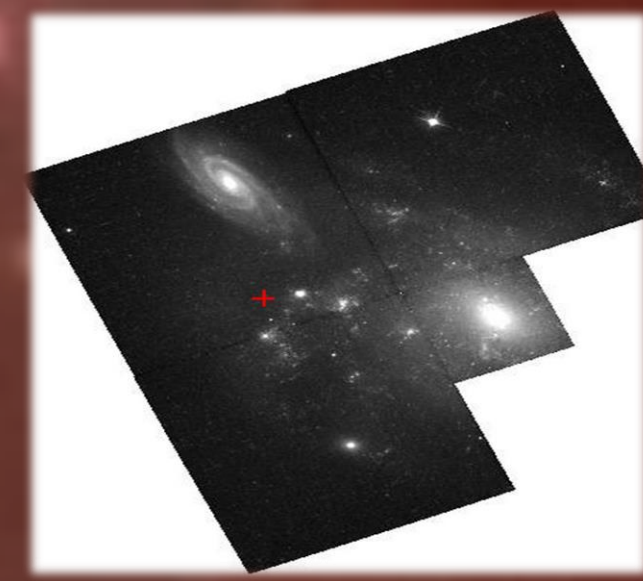


Star-like, but too red-shifted to be a star



Strong absorption lines

Determining the Nature of a Galaxy



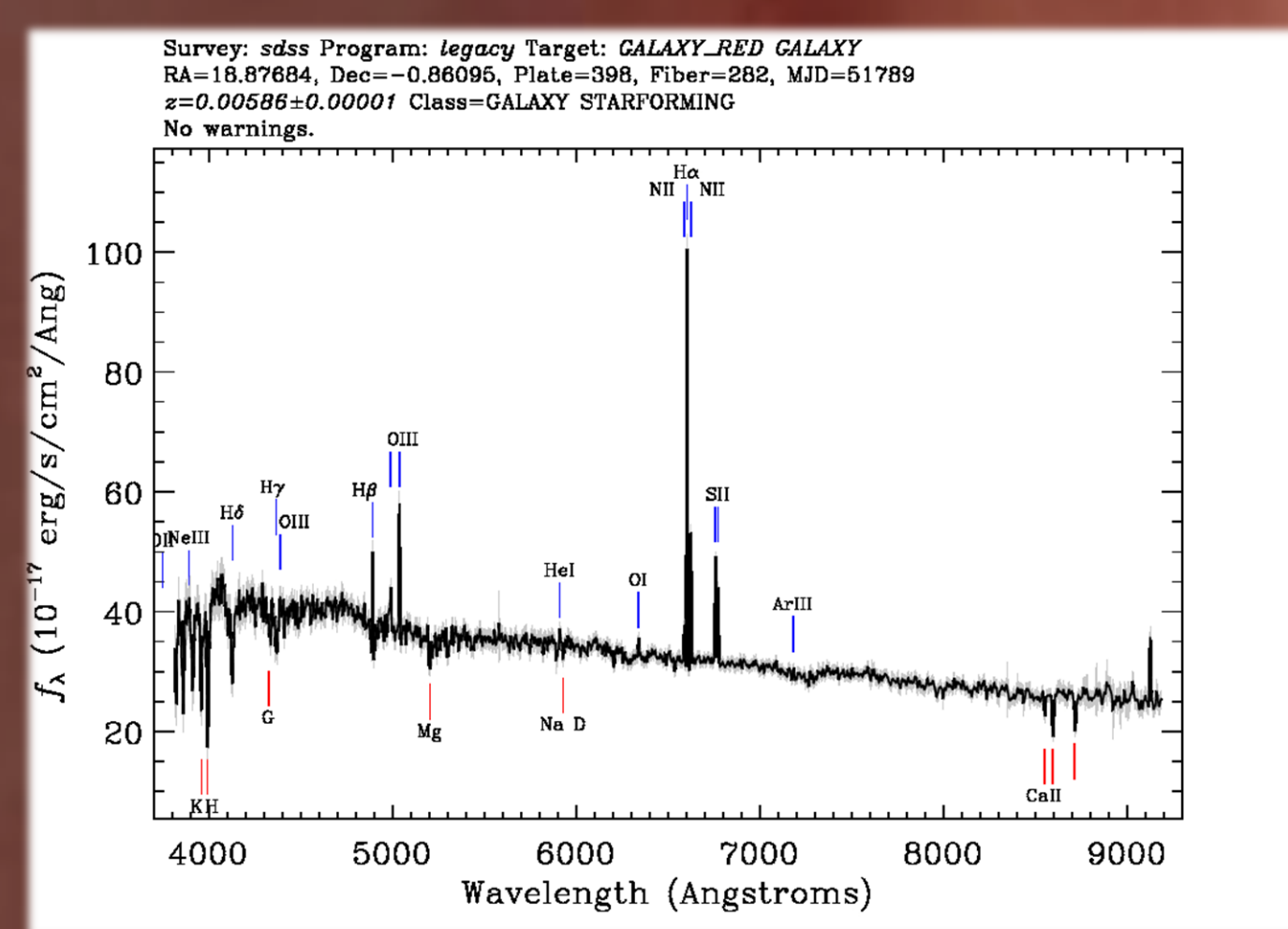
HST Raw Image

Provides a high-definition image of the object



SDSS Image

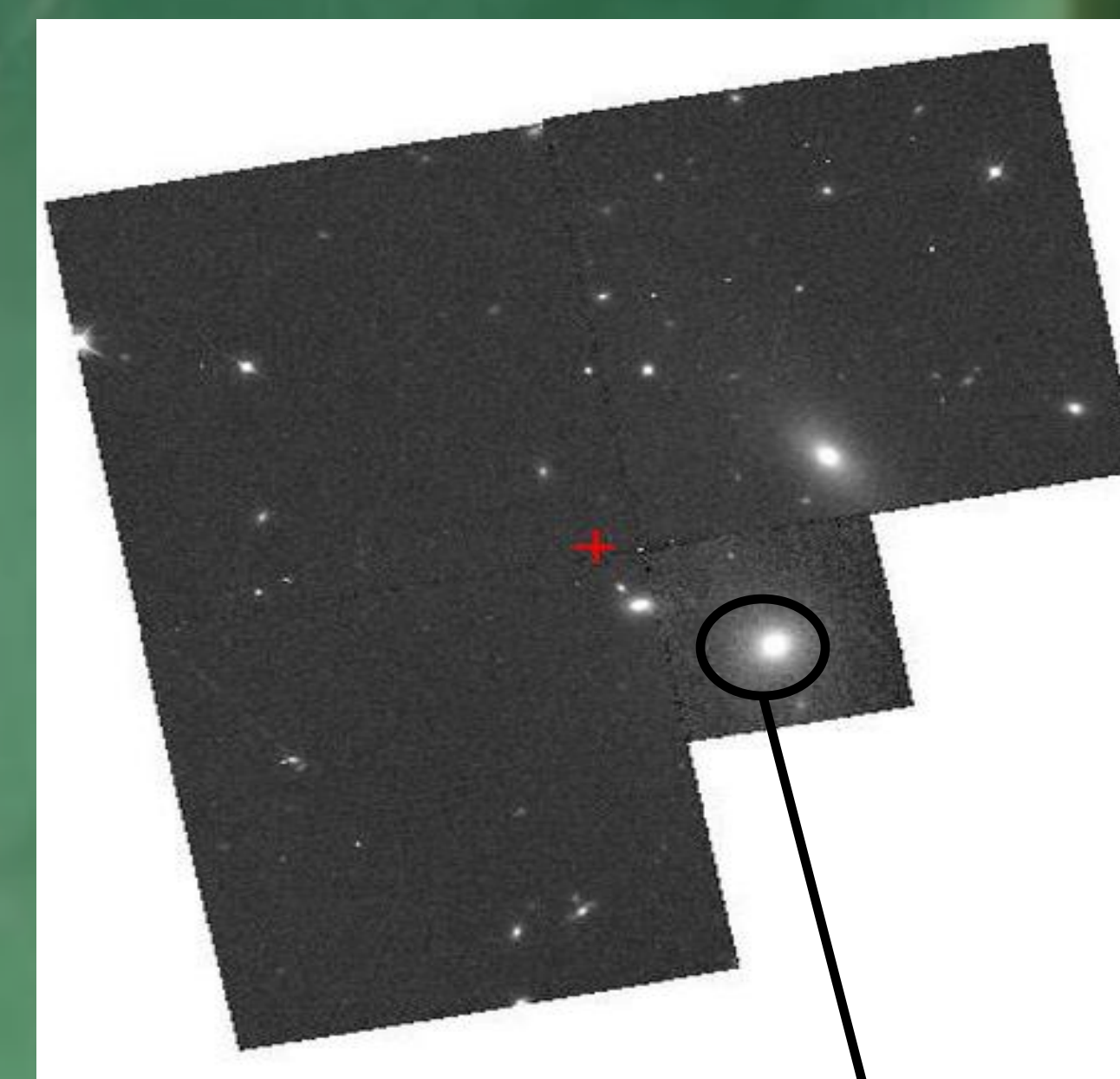
Provides a color image to aid in interpretation



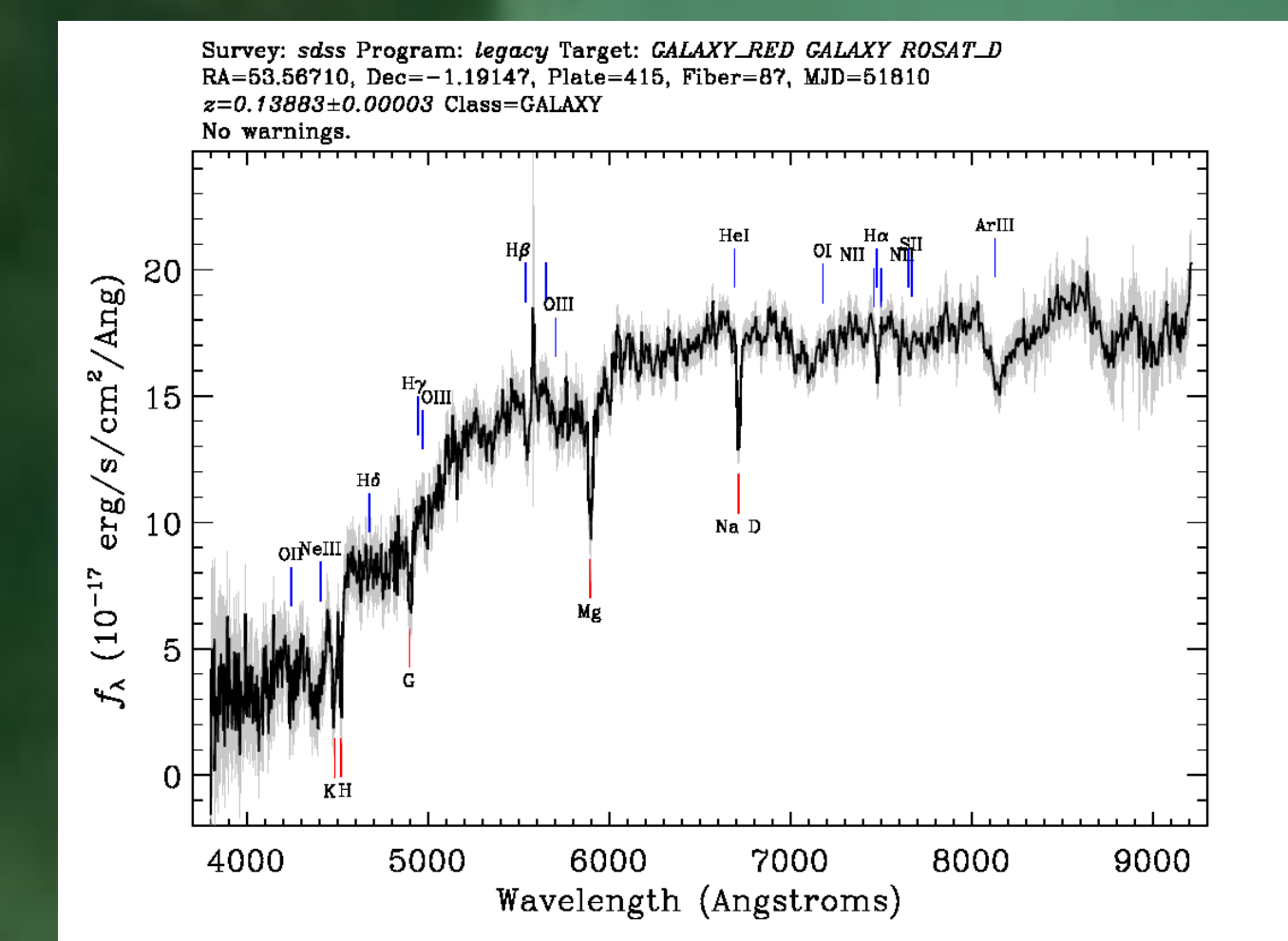
Spectrograph

Provides data about color, and emissions/absorption from the object

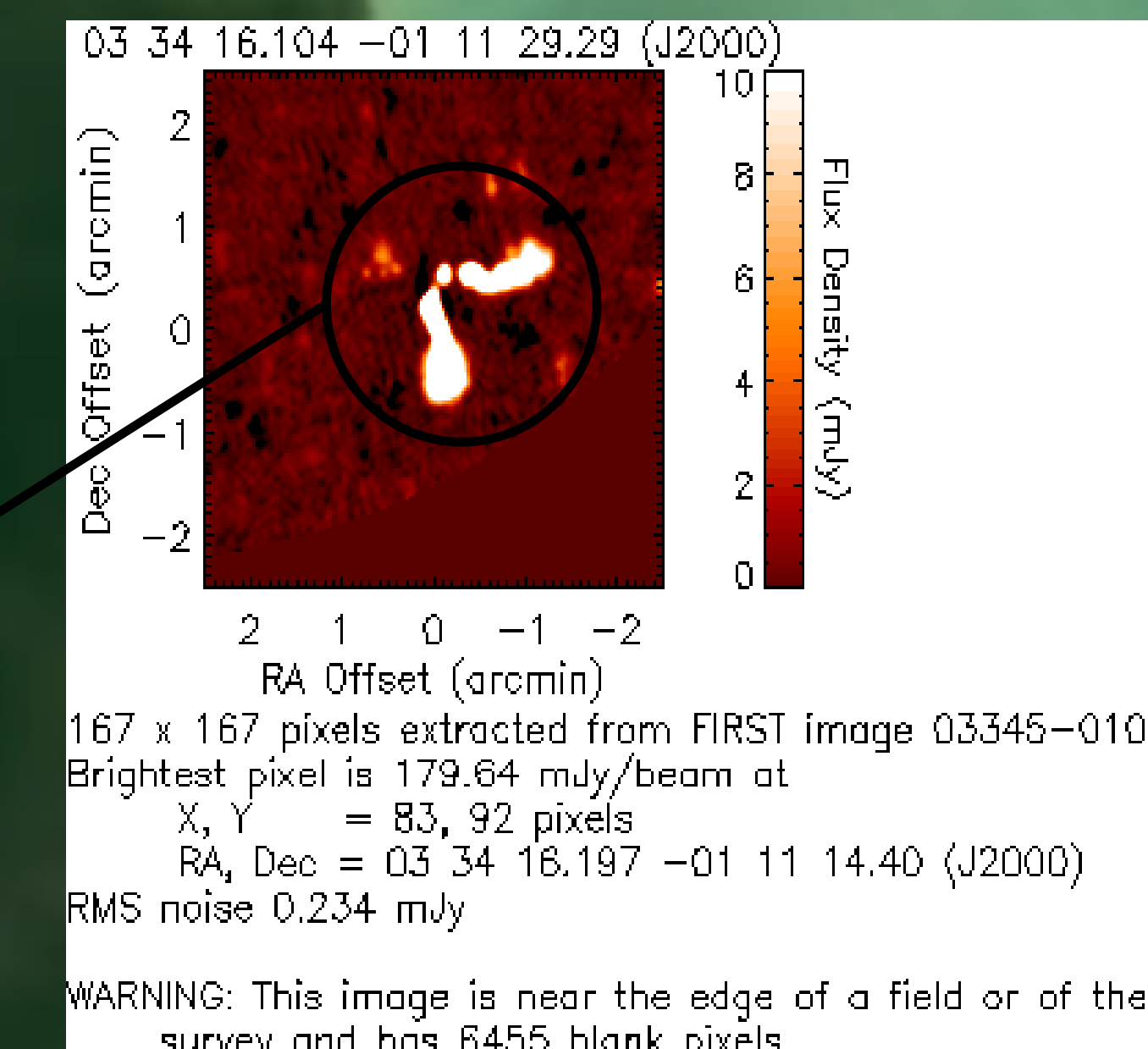
What We're Looking For



Elliptical



Very little free Hydrogen for the black hole to accrete as evidenced by small H-alpha spike



Yet, large, bright radio jets imply the presence of a very active galactic nucleus

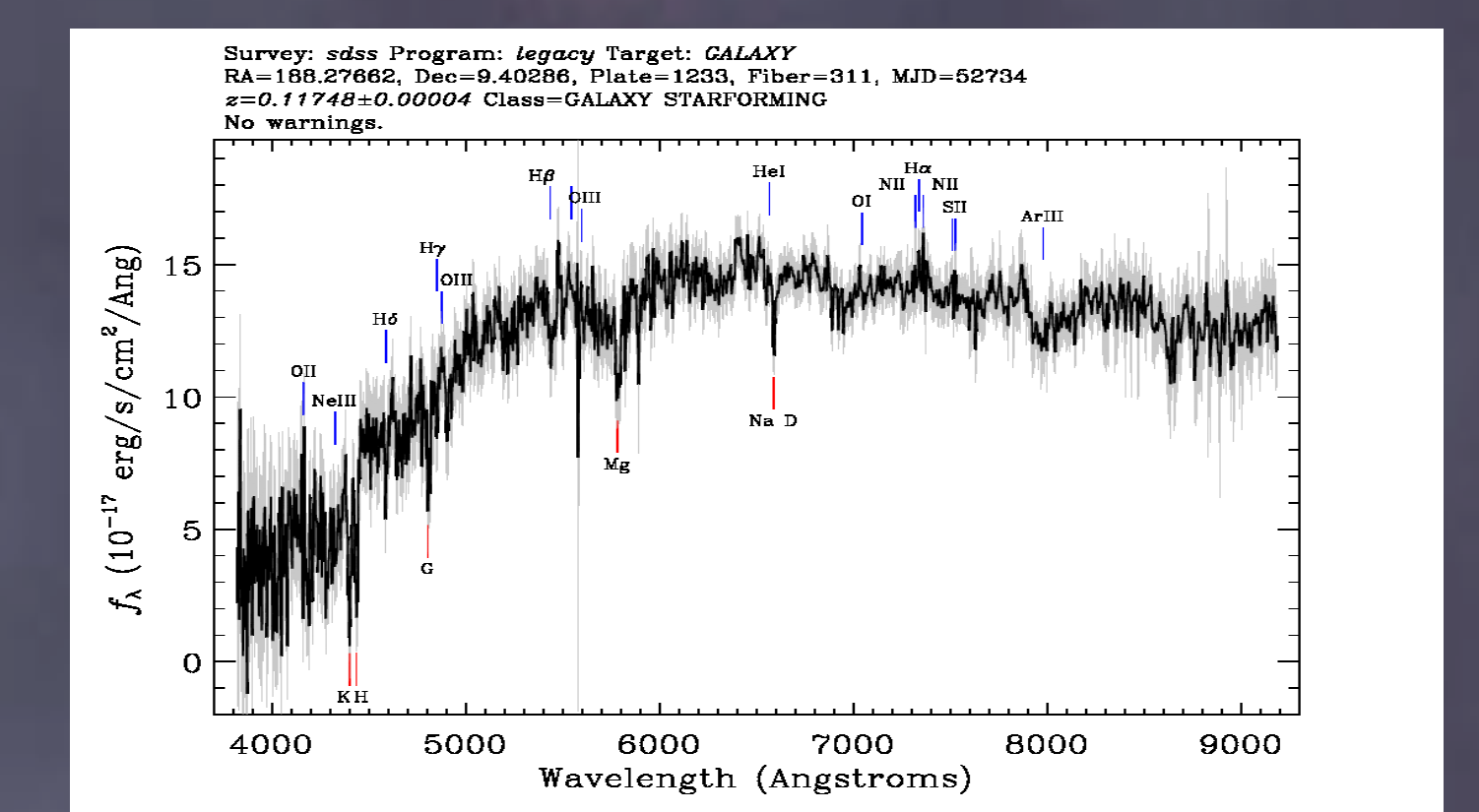
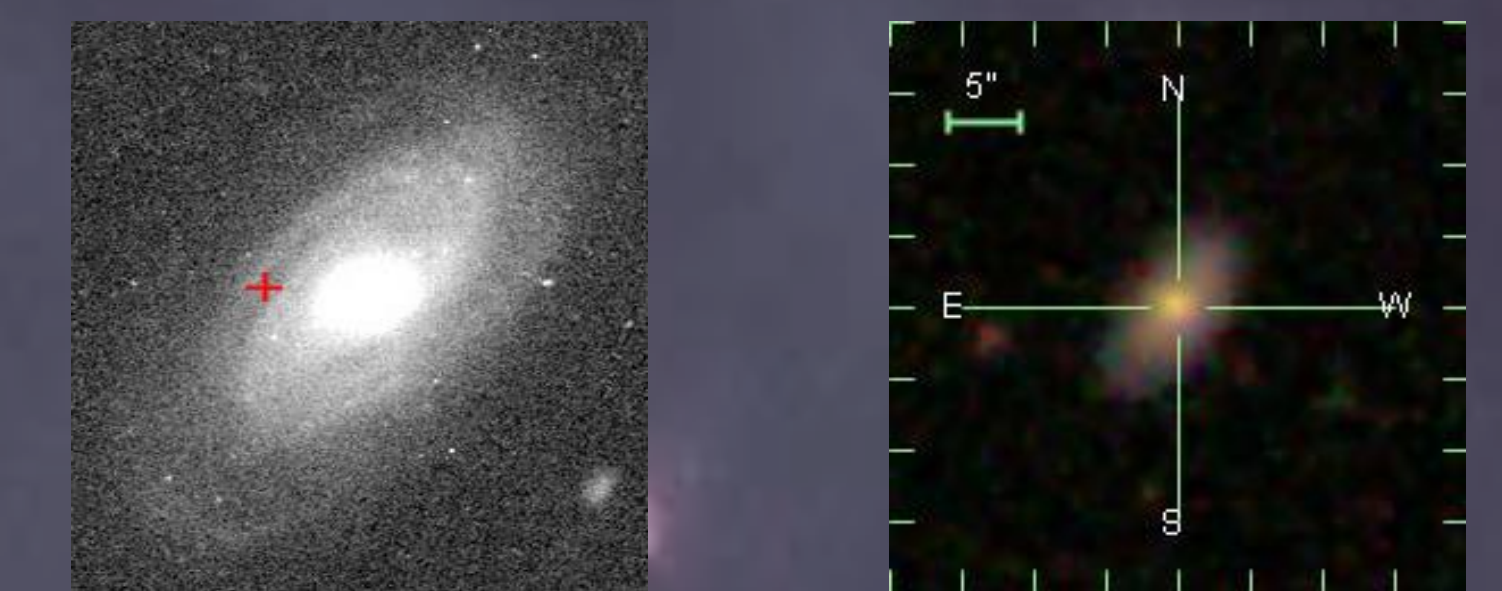


Other Objects of Interest

In our search for radio-loud elliptical galaxies, we have found several other objects that deserve mention.

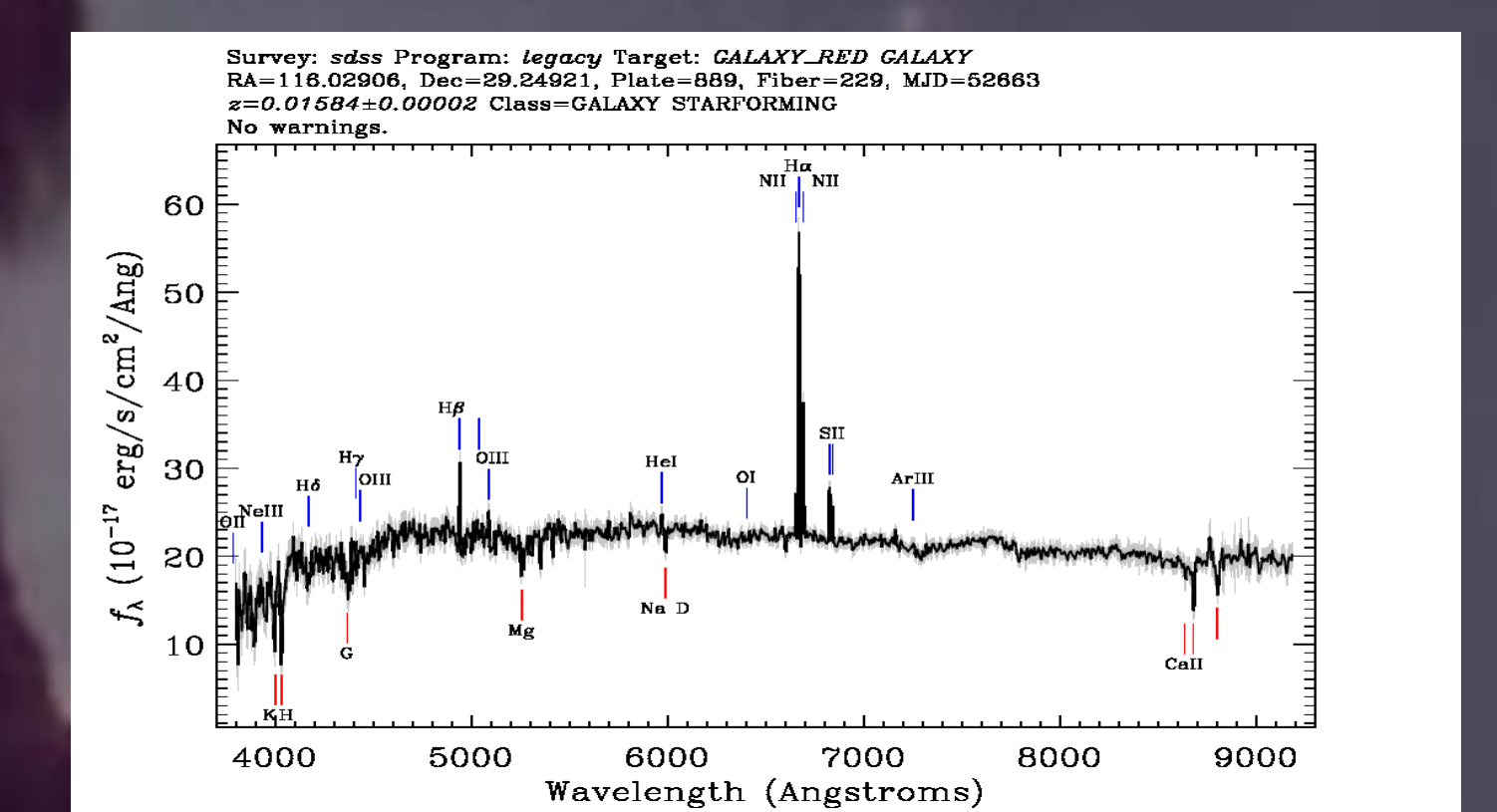
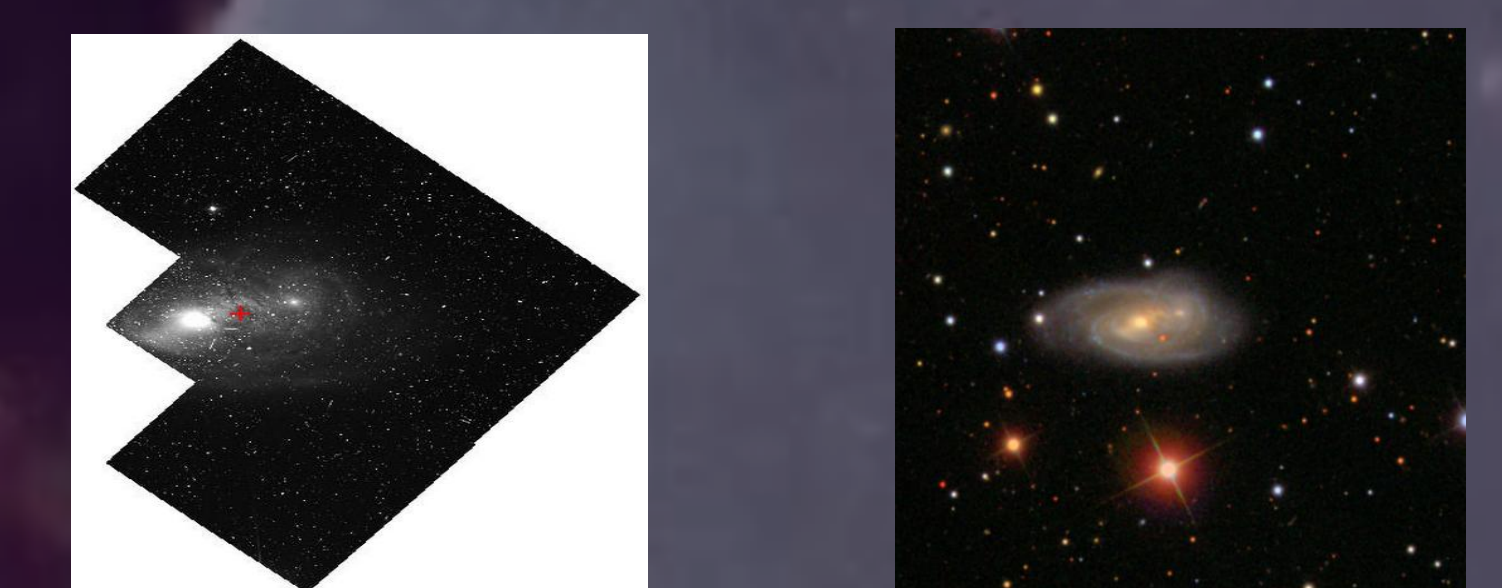
Passive Spiral Galaxy:

Some galaxies are clearly spiral, but lack the signature Hydrogen signatures that spirals often display



Merger:

When two spiral galaxies merge, the free gasses emit a large spike in the spectrum, implying a lot of hydrogen



Acknowledgements

Johns Hopkins University
Sloan Digital Sky Survey (<http://www.sdss.org/>)
FIRST Survey (<http://sundog.stsci.edu/index.html>)
Hubble Legacy Archive (<http://hla.stsci.edu/hlview.html>)