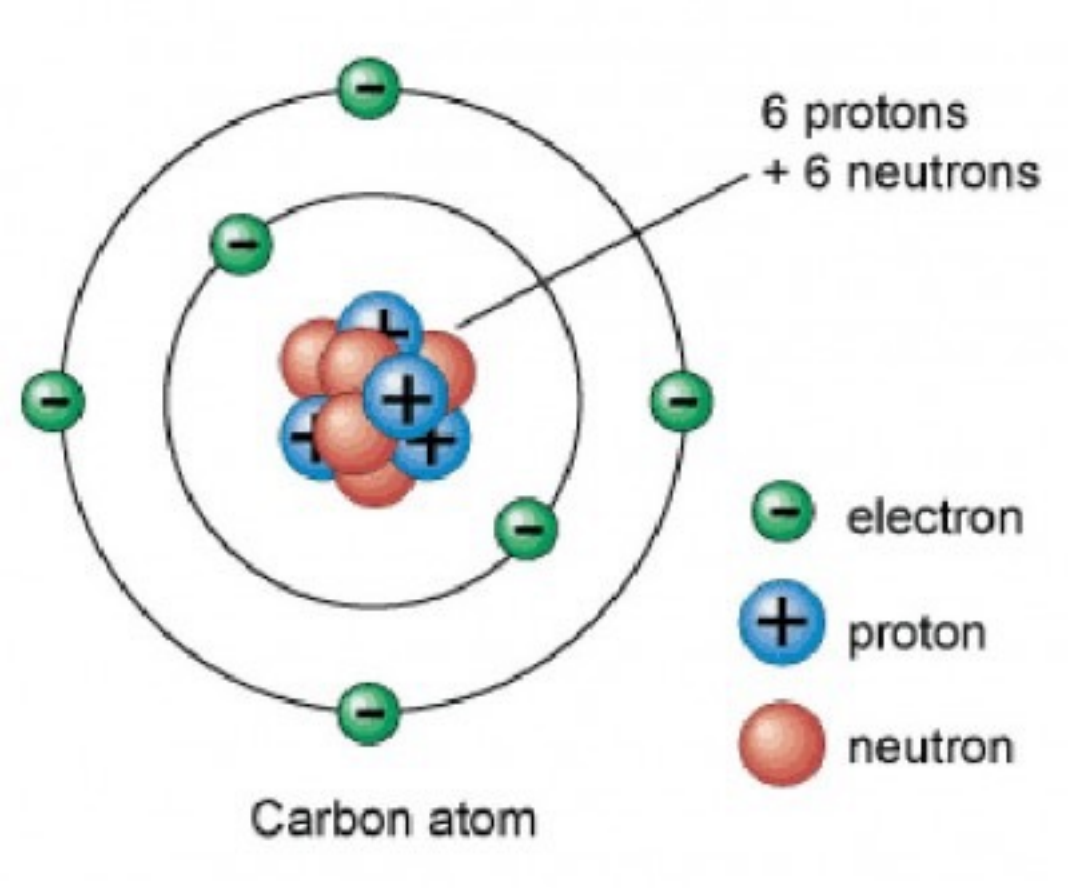
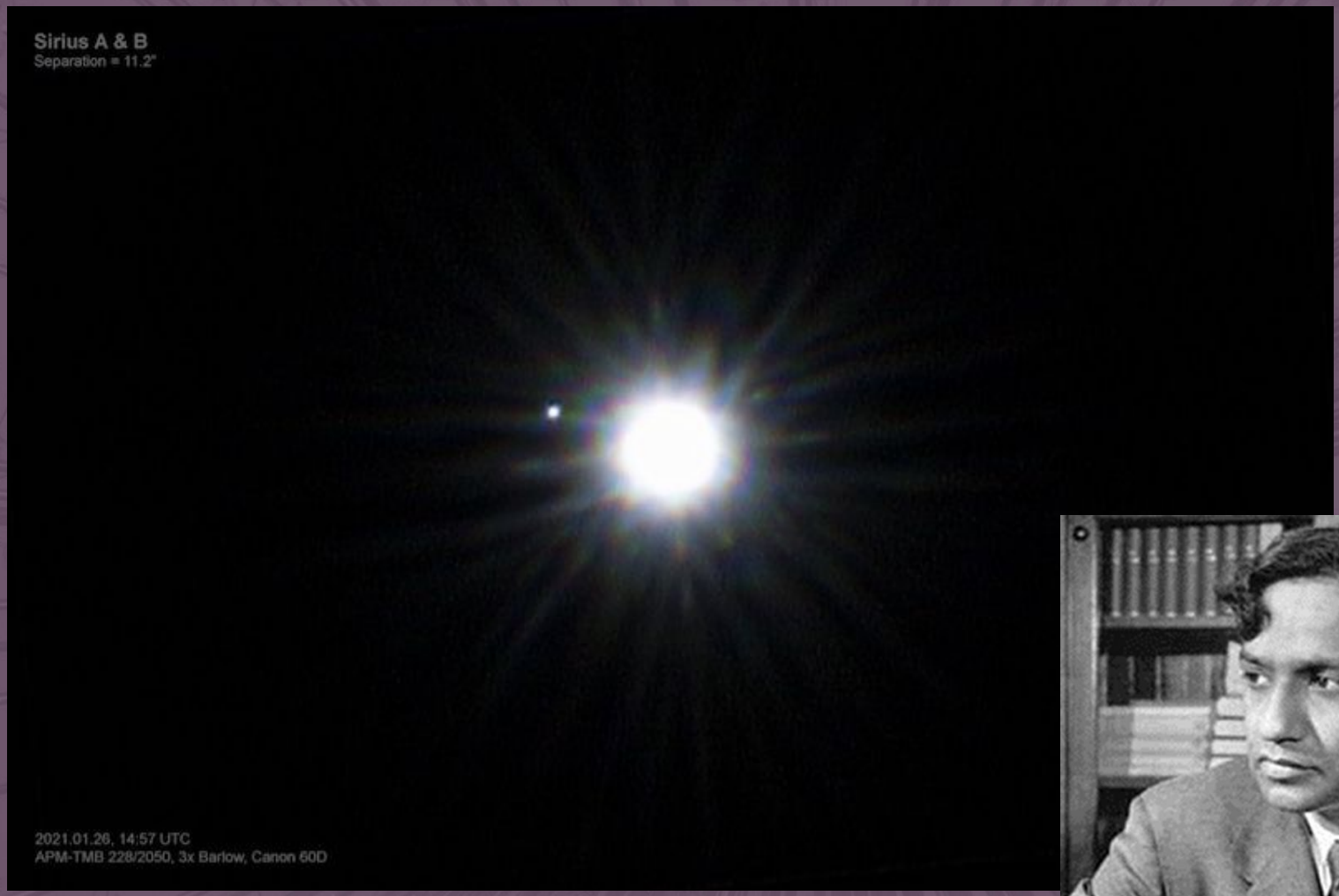


Not to scale! Diameter of the nucleus (protons and neutrons) is about 100,000 times smaller than the diameter of atom.

Mass of a proton and neutron are nearly the same.

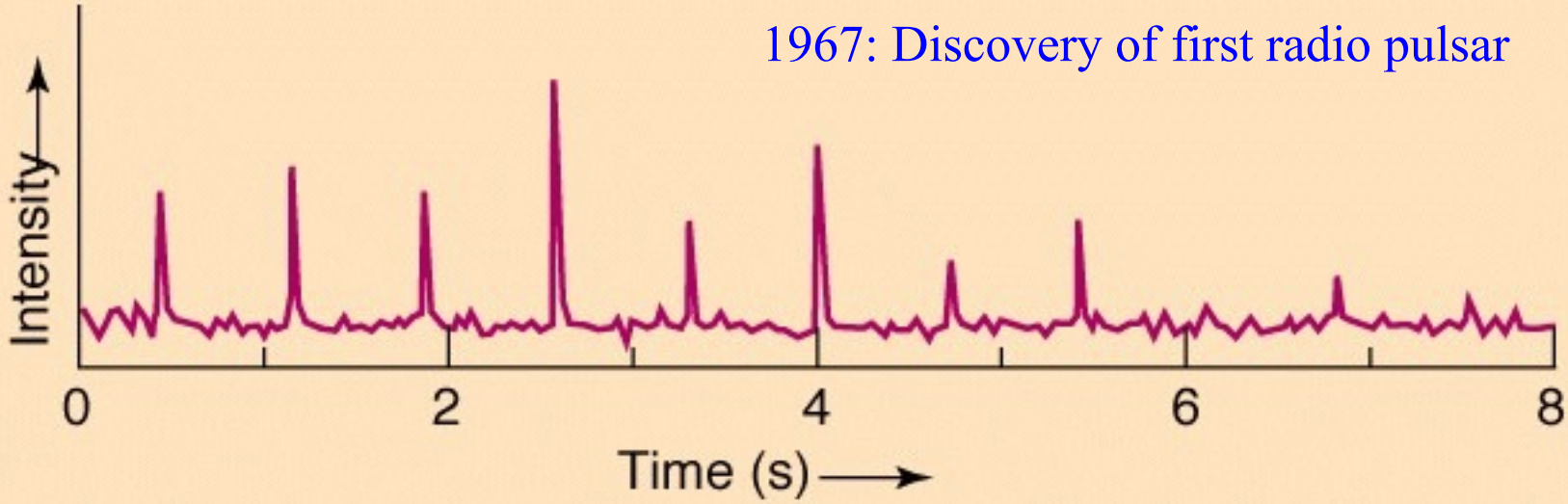
Mass of an electron is 2000 times smaller.



Sirius A: Main sequence star
Sirius B: White dwarf star

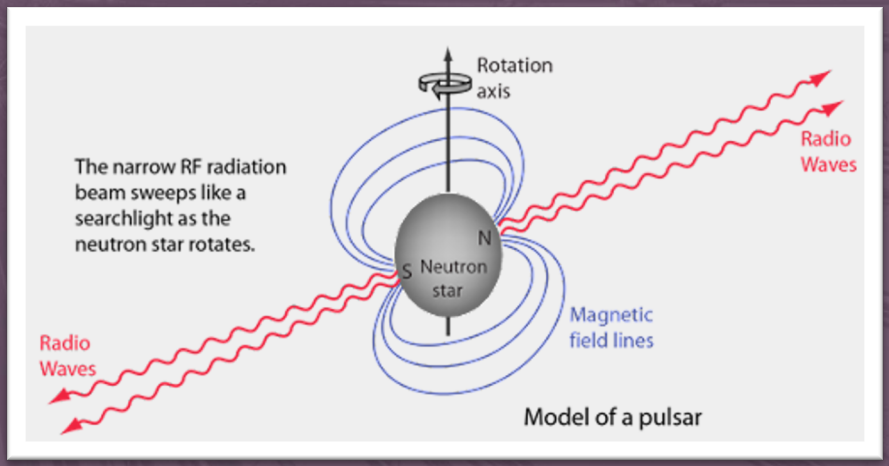
Subramanyan Chandrasekhar

1967: Discovery of first radio pulsar

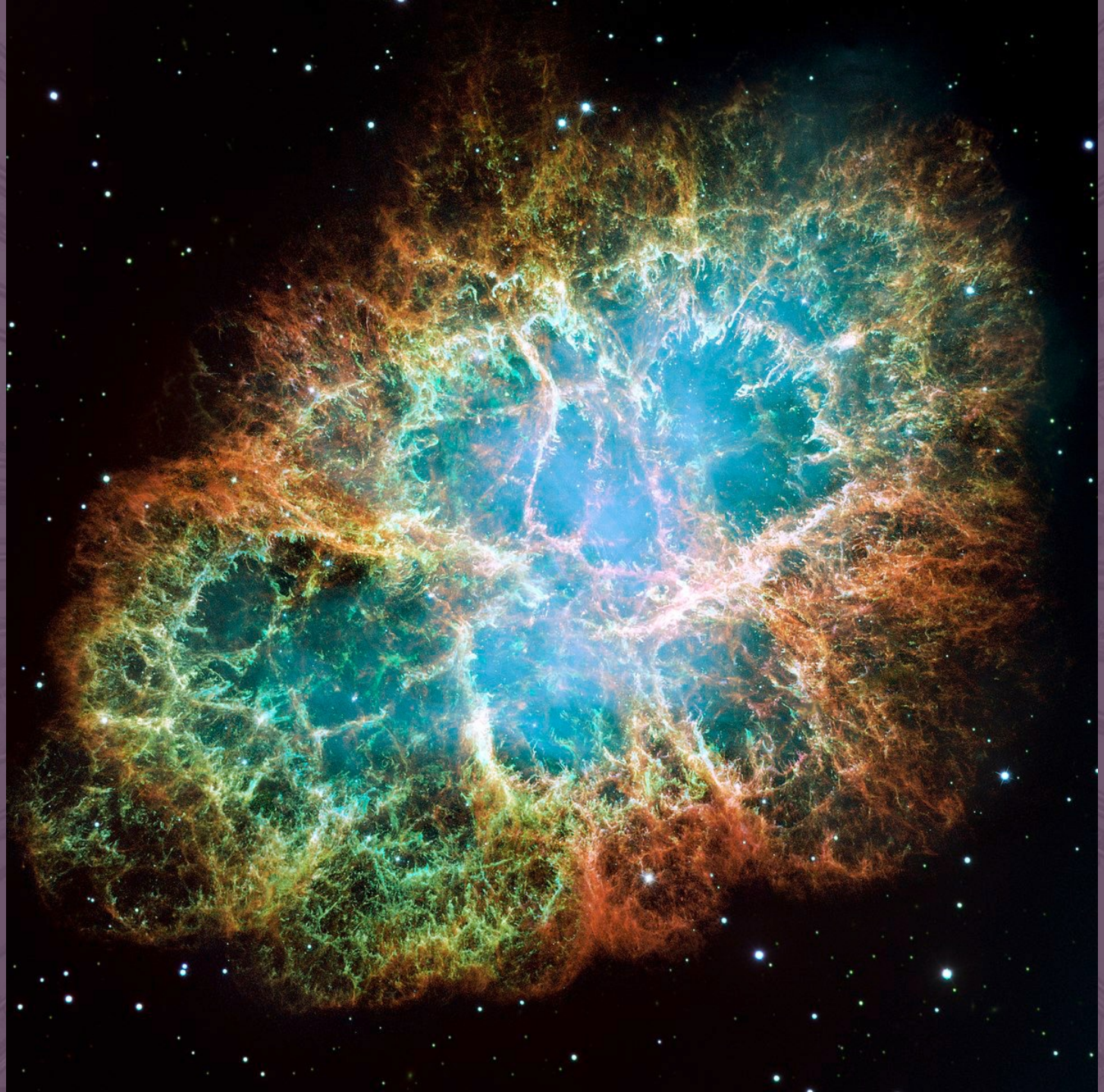


Jocelyn Bell-Burnell

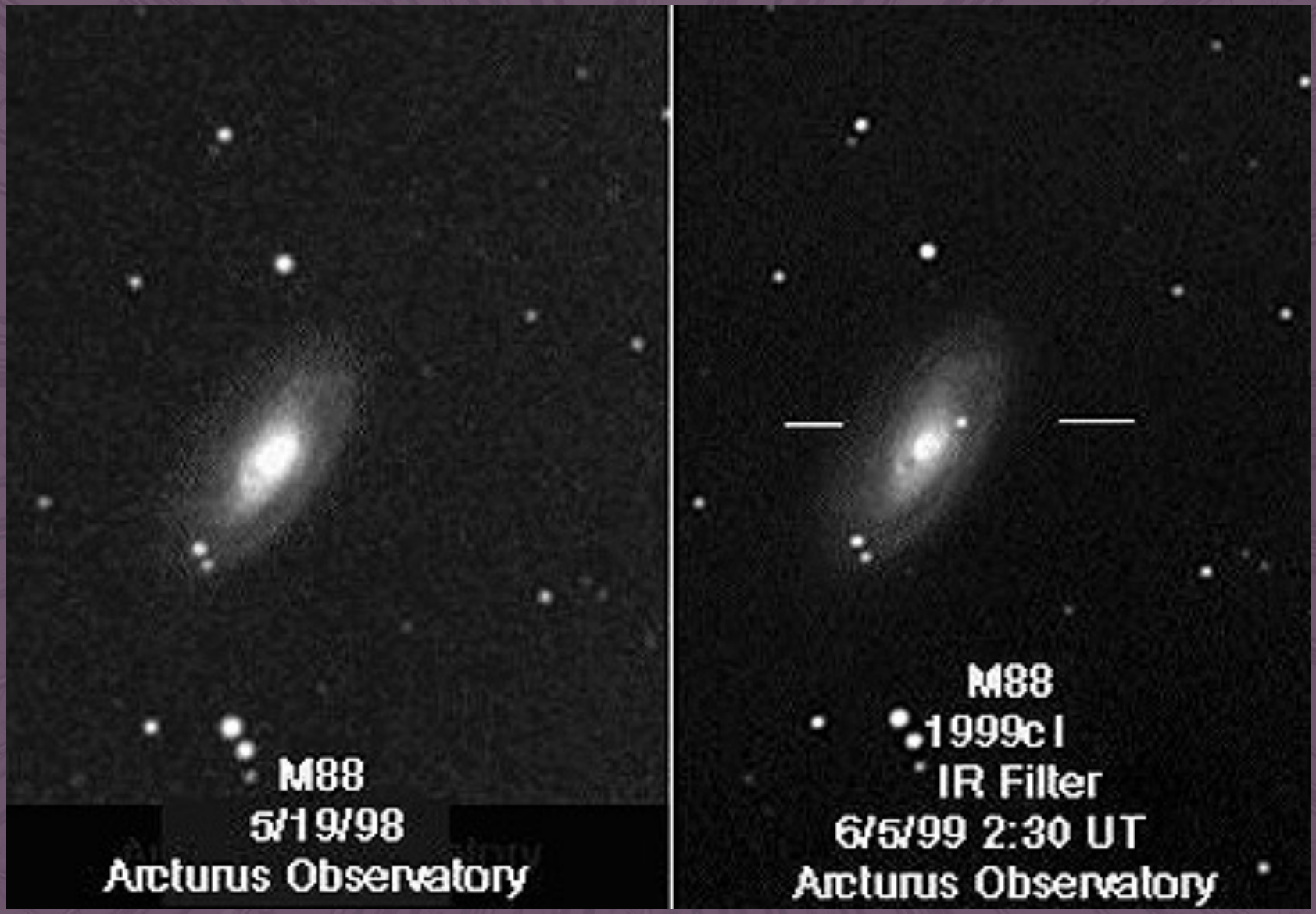
Antony Hewish

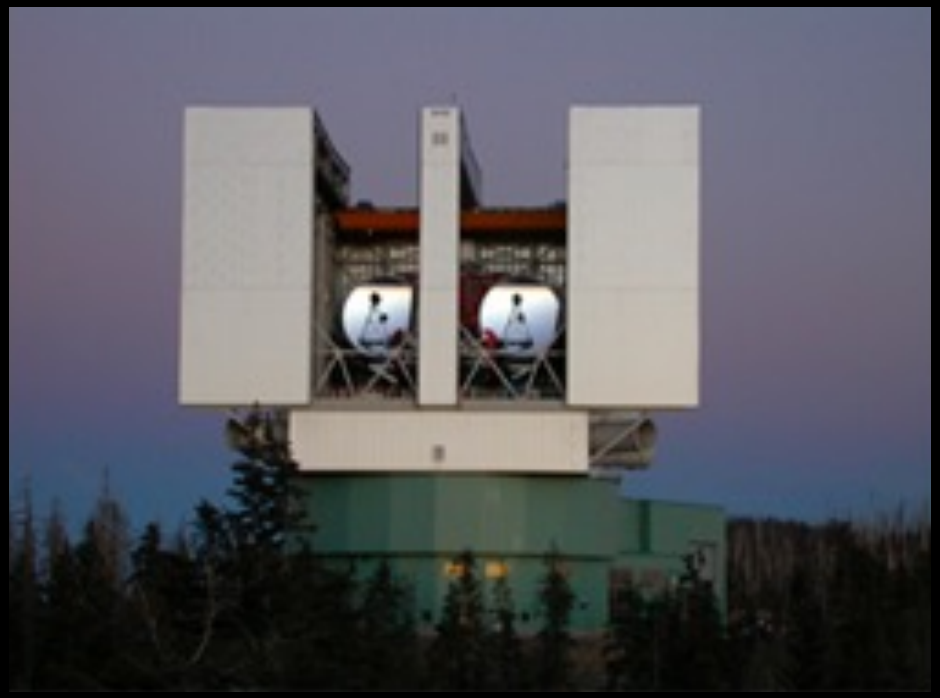


Interpretation: A rotating neutron star beaming radio waves.

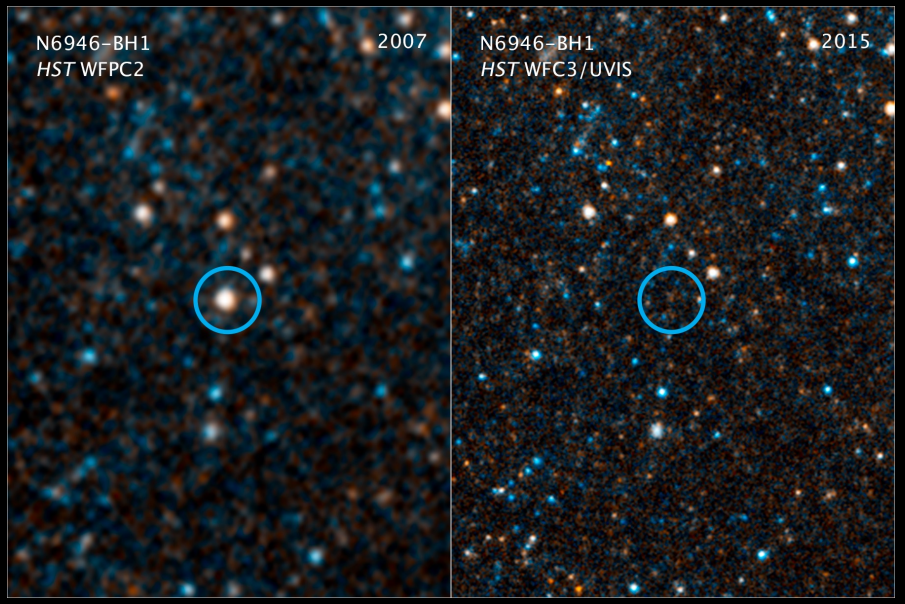


Supernova explosion in a nearby galaxy.

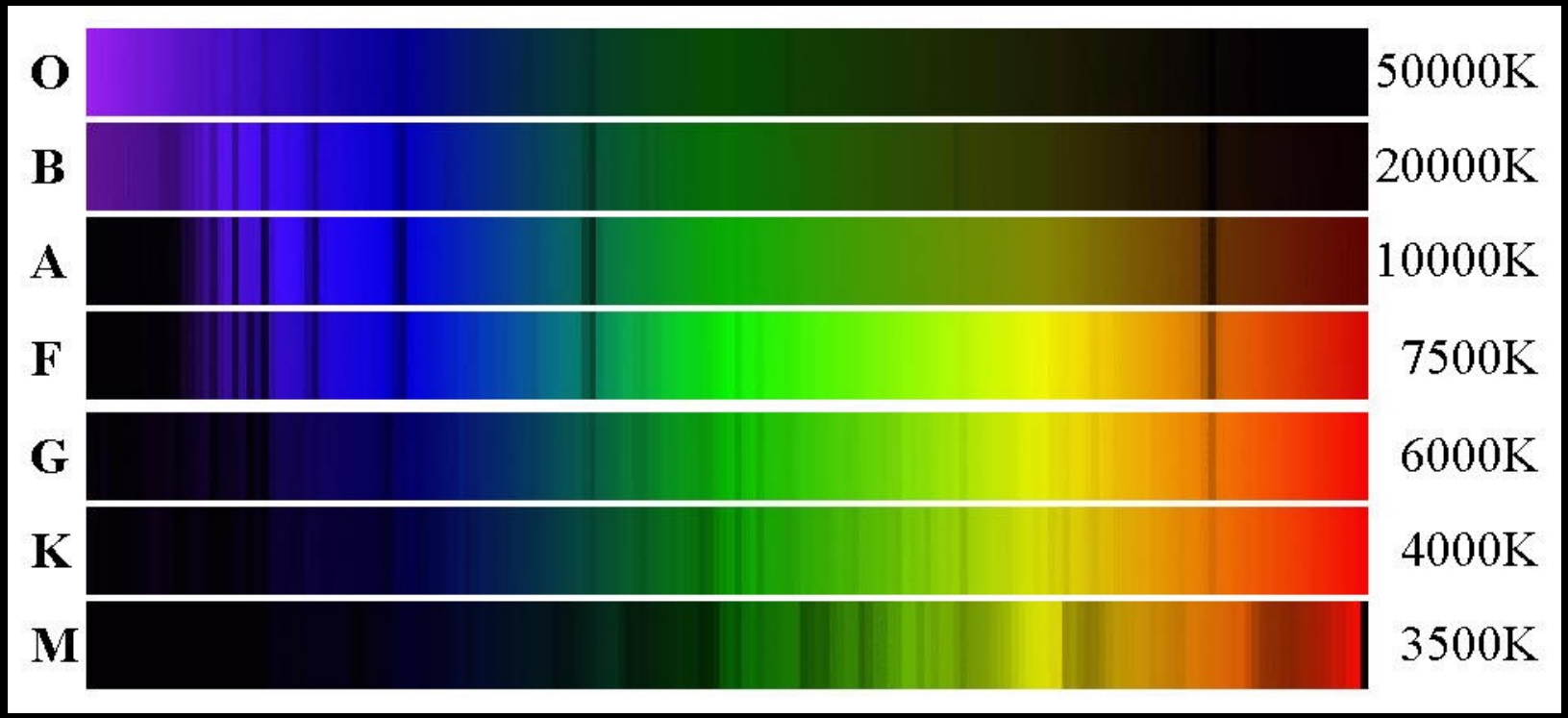




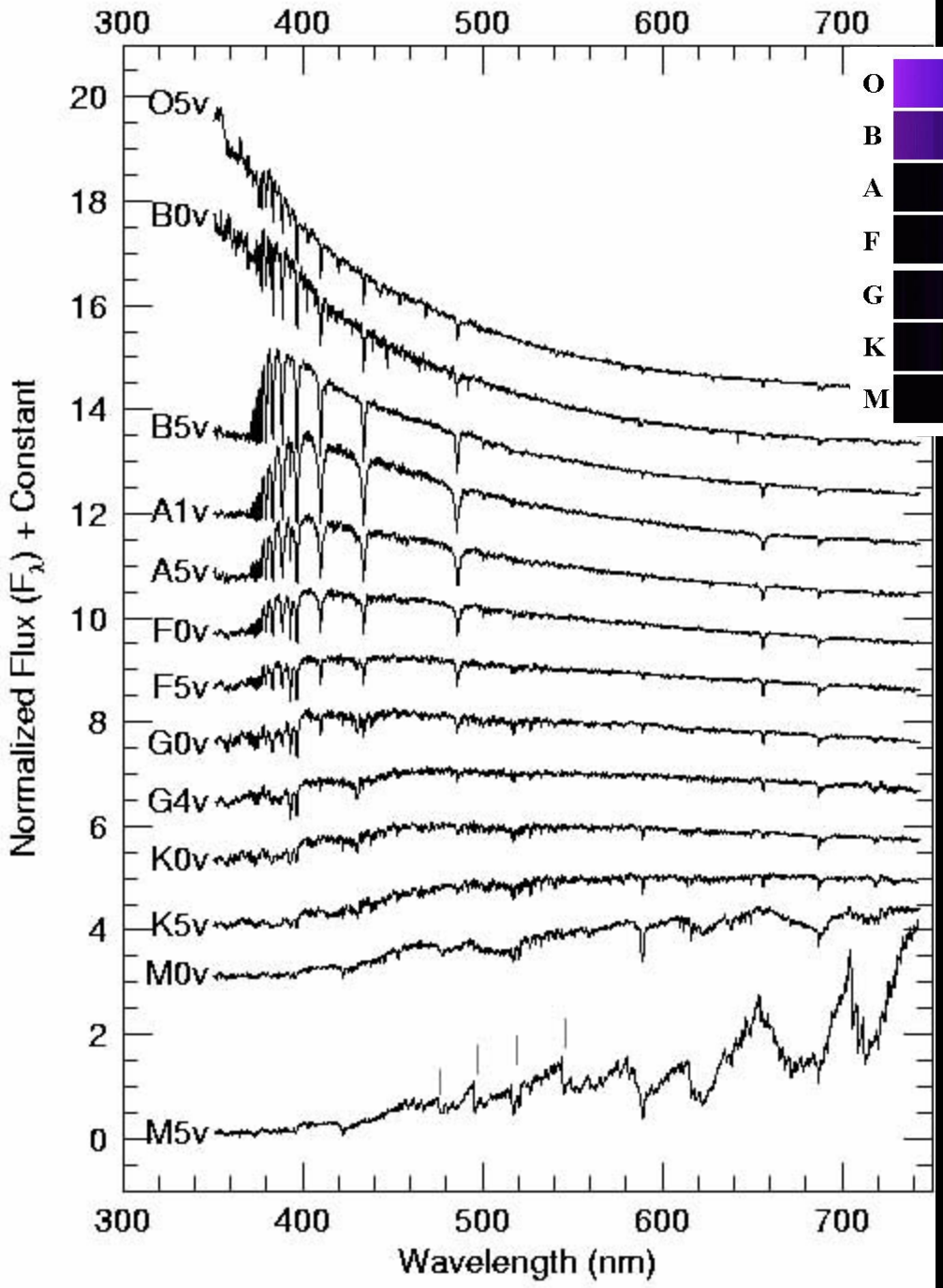
Formation of a “stellar mass” BH (3 – 100 × M_{sun})

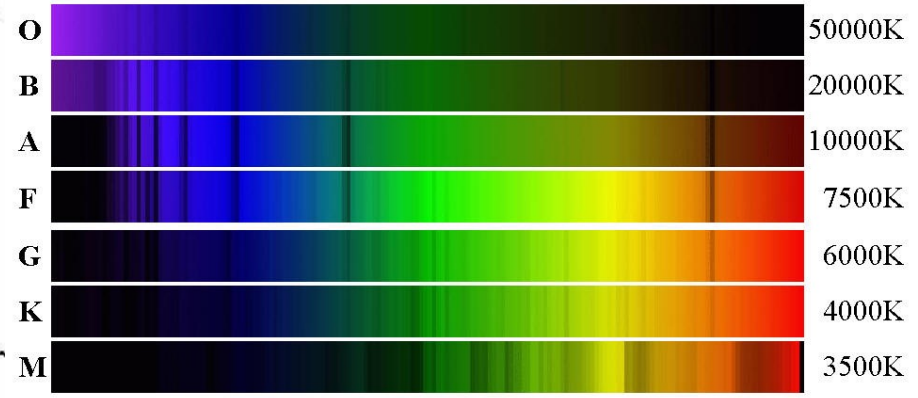


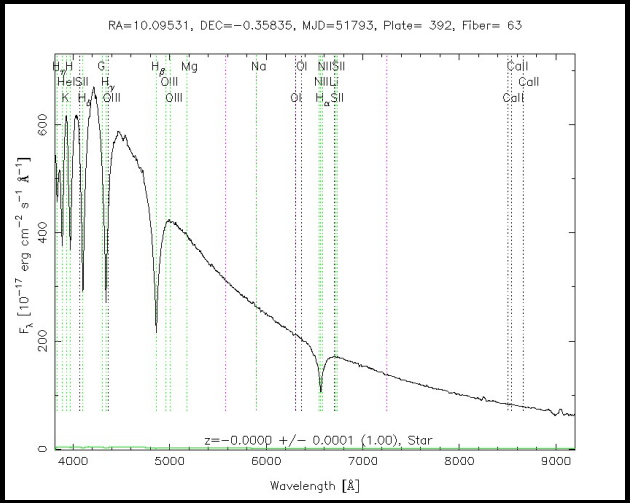
Spectra of Stars

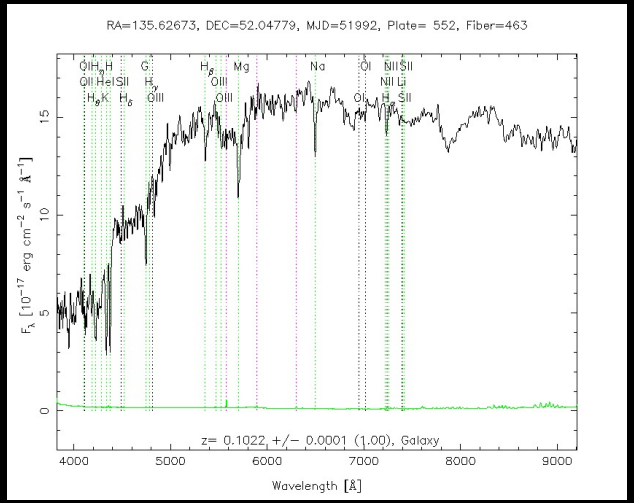


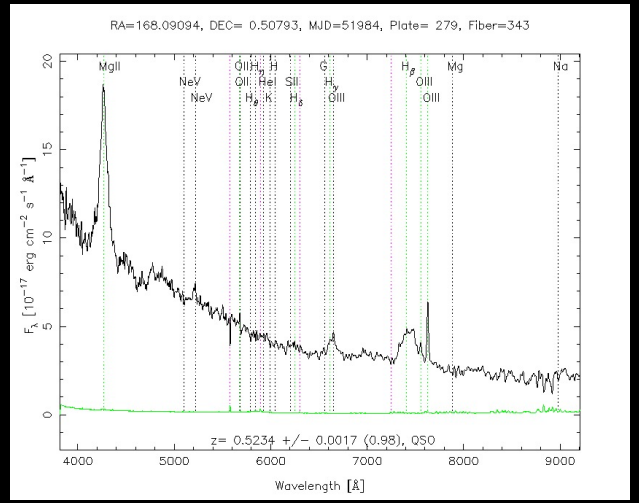
Wavelength →


300
400
500
600
700
20
18
16
14
12
10
8
6
4
2
0
O5v
B0v
B5v
A1v
A5v
F0v
F5v
G0v
G4v
K0v
K5v
M0v
M5v
Normalized Flux (F_λ) + Constant
Wavelength (nm)


O
B
A
F
G
K
M
50000K
20000K
10000K
7500K
6000K
4000K
3500K



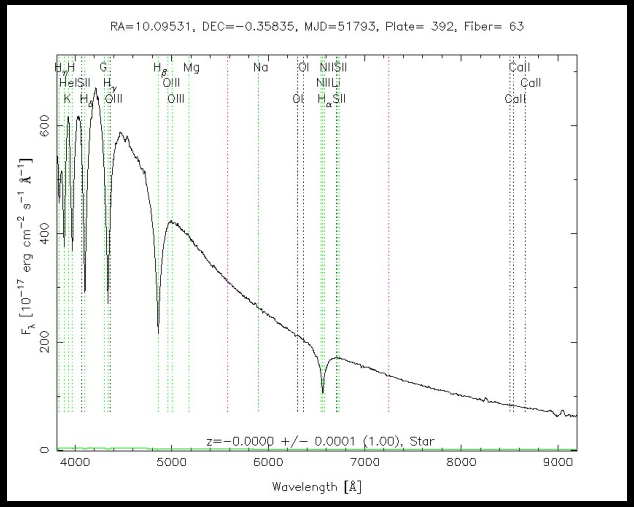


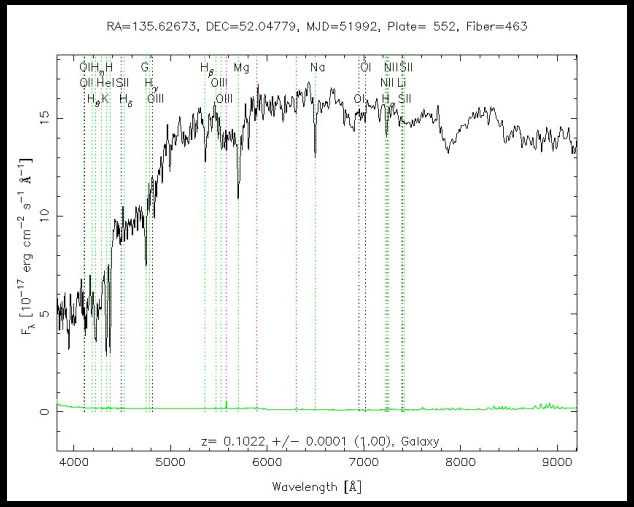


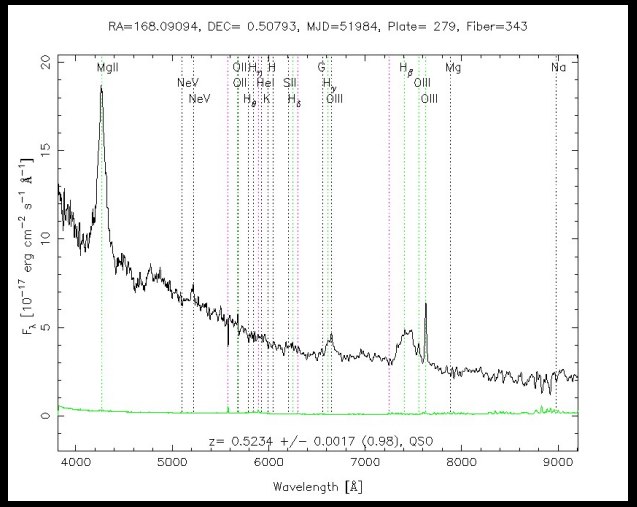
White dwarf

Galaxy

Quasar



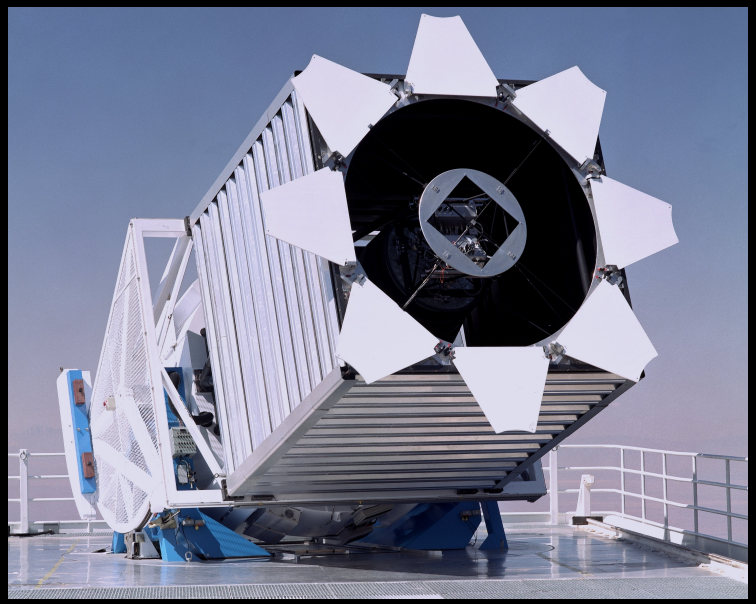


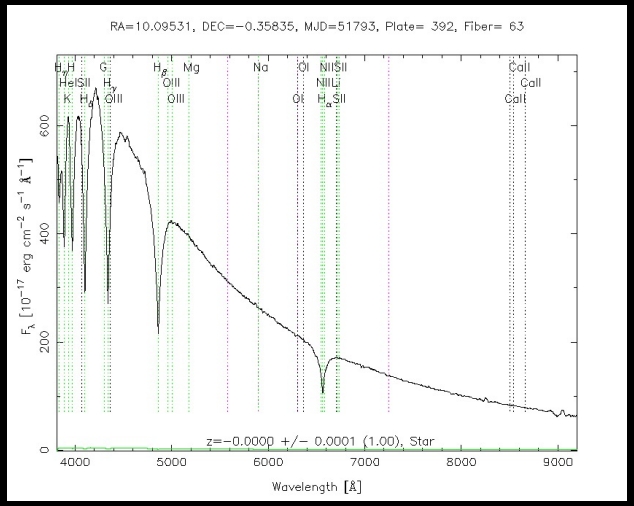


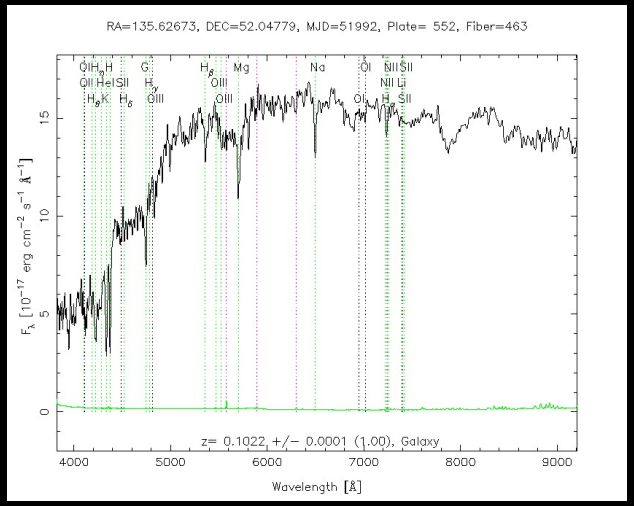
White dwarf

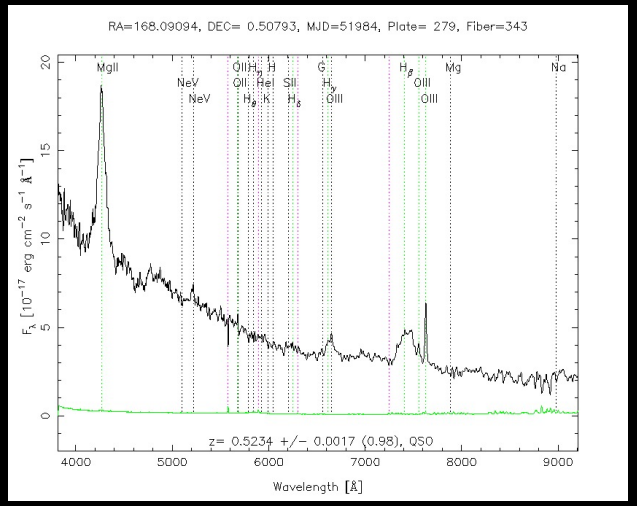
Galaxy

Quasar









White dwarf

Galaxy

Quasar