Parte I
Procesos físicos

Índice

1. Consideraciones generales

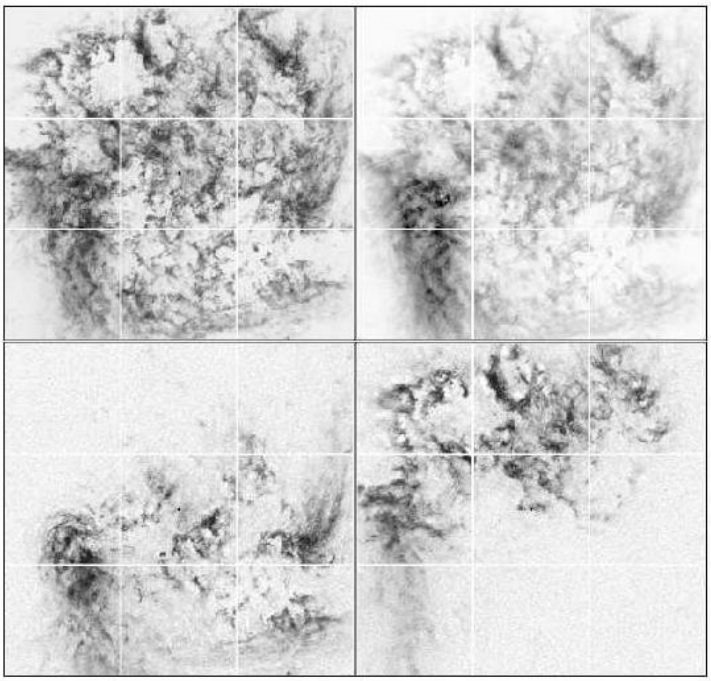
1.1. Equilibrio hidroestático

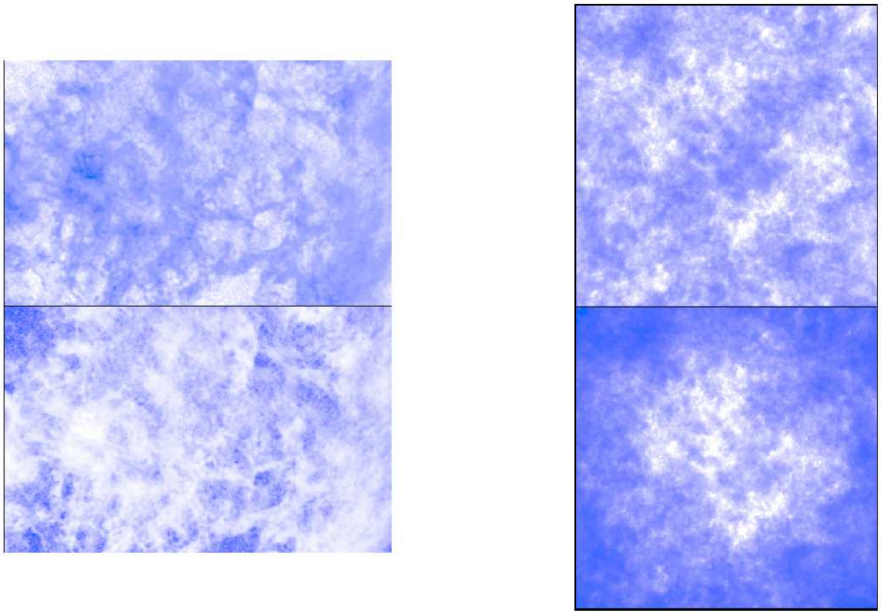
Teorema del virial

- ....

1.2. Formación estelar

Análisis fractal de H I 21 cm en LMC (Elmegreen, Kim, Staveley-Smith ,2001,ApJ,548,749).





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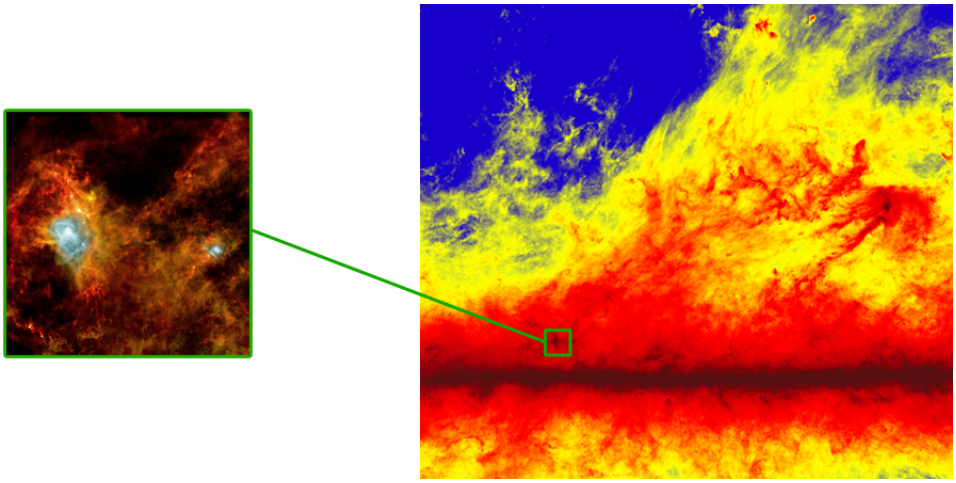
Example star forming region: Aquila Rift



Left: Herschel, Right: Planck

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Example star forming region: Coal sack

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Example star forming region: Coal sack

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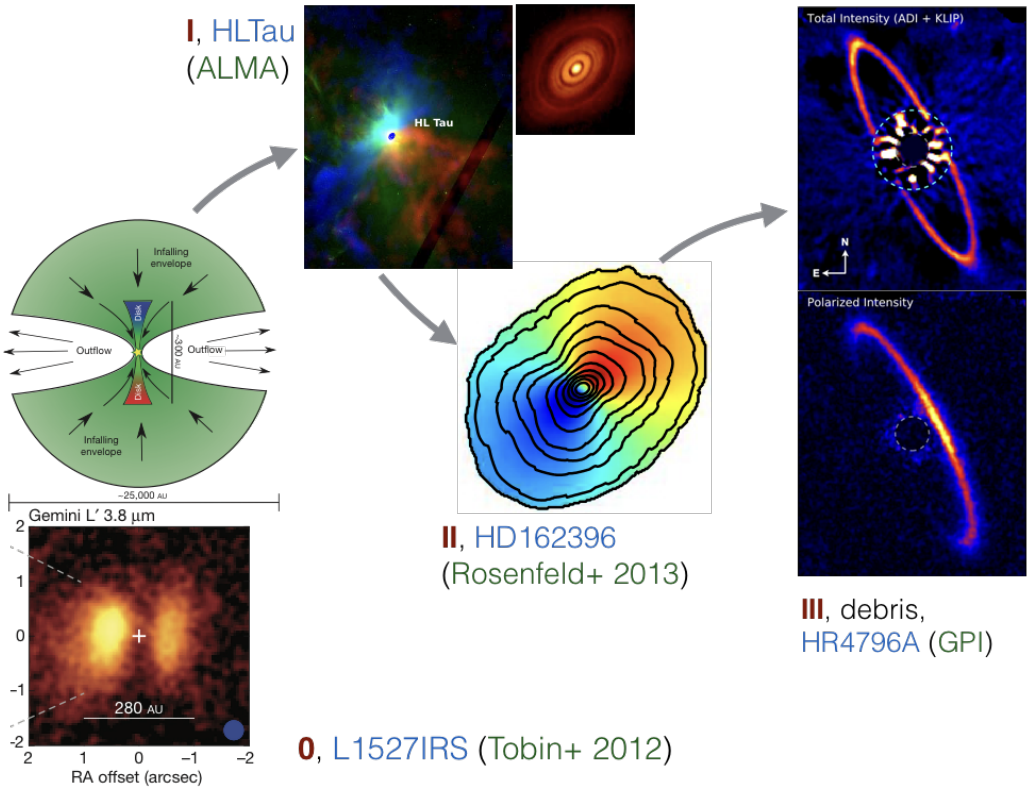

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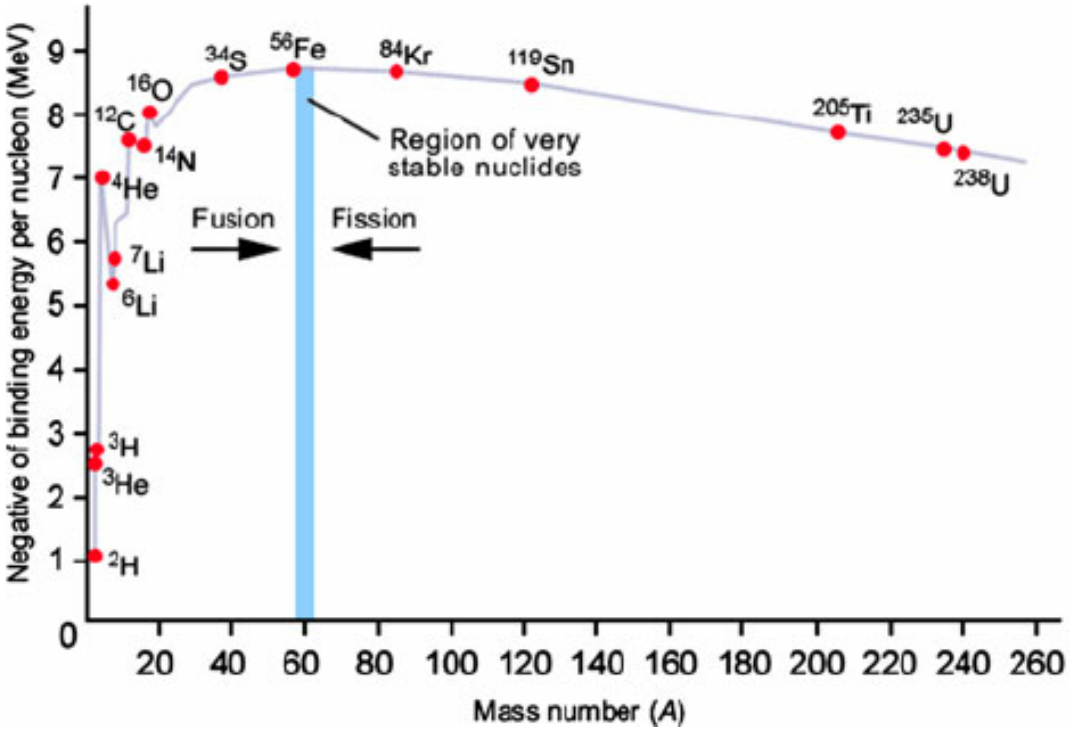
1.3. Nucleosíntesis estelar

Energía nuclear de ligazón



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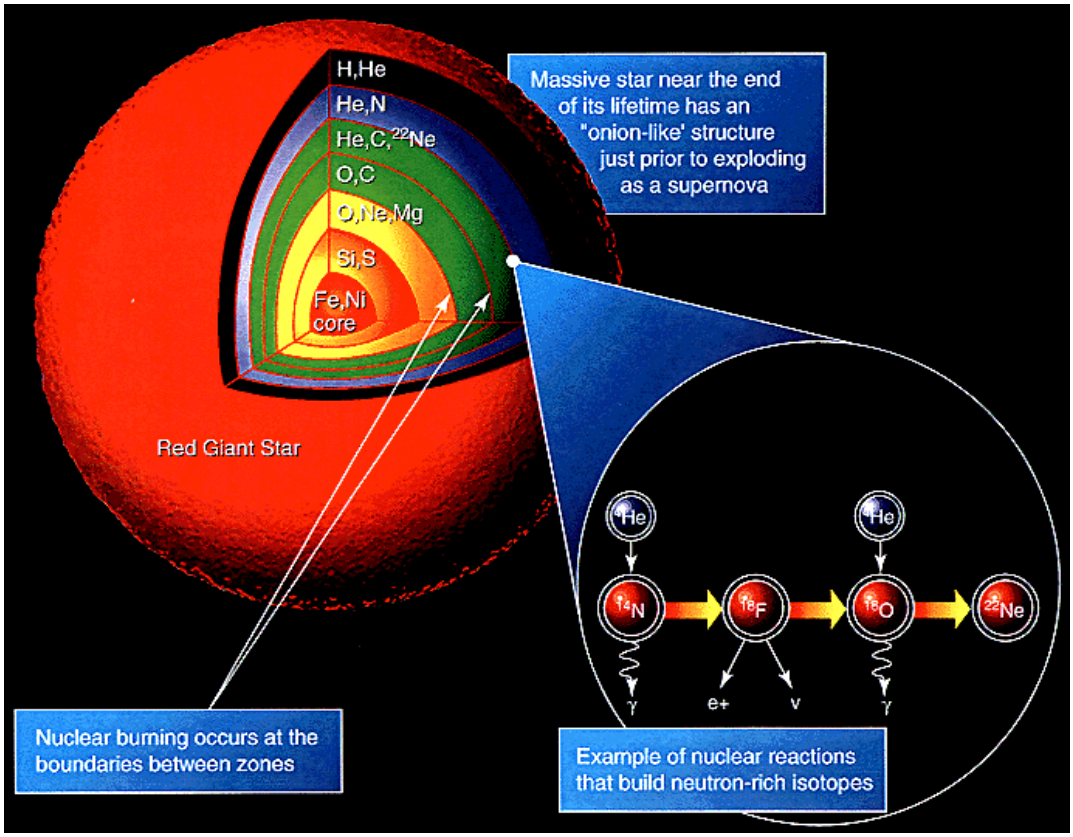
Energía nuclear de ligazón



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1.4. Restos estelares

Planetary Nebulae

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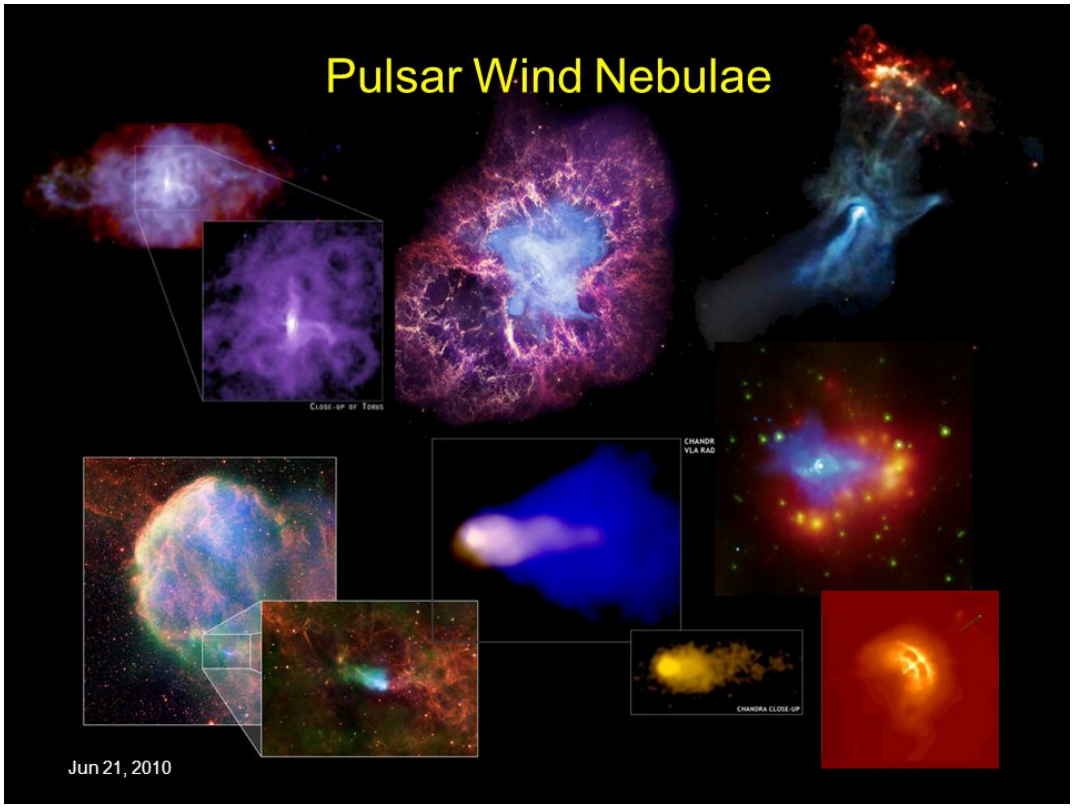
Pulsar Wind Nebulae



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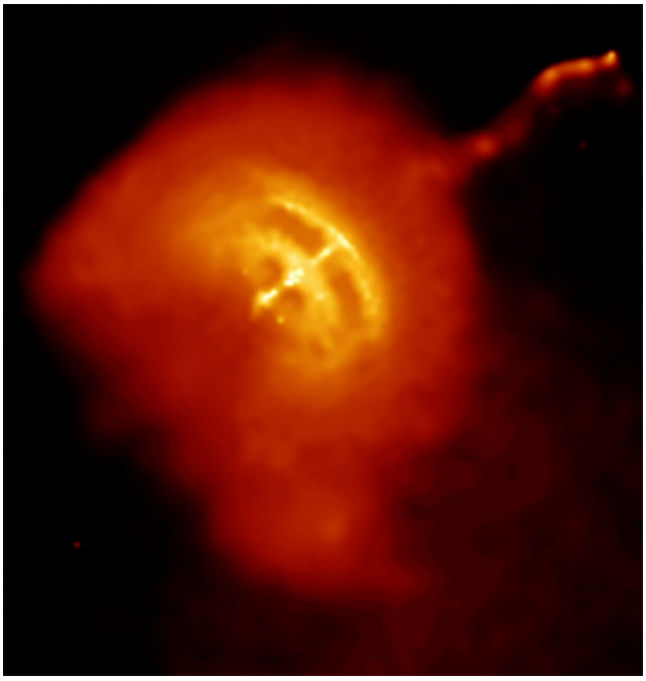
Vela Pulsar



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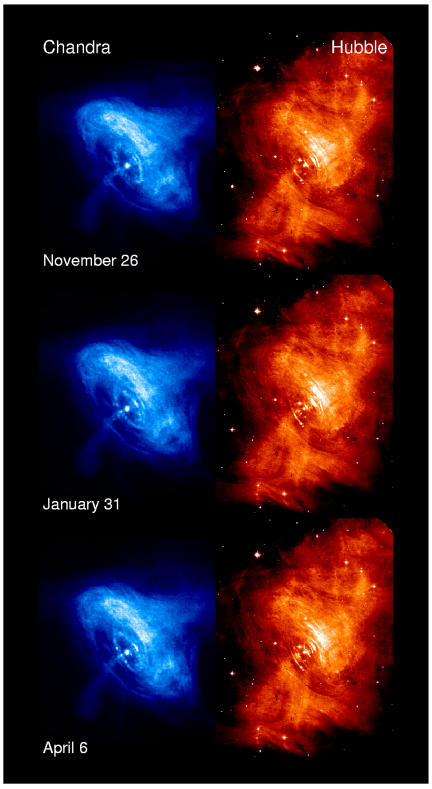
Crab Pulsar



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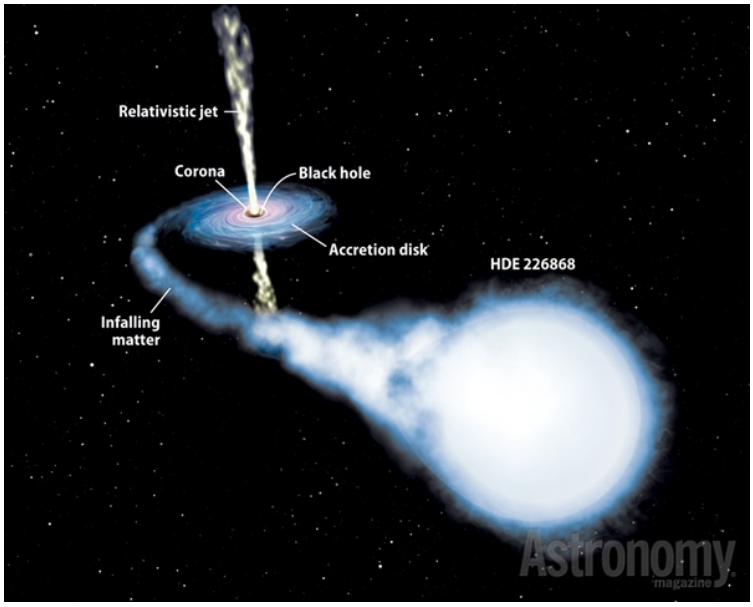
Stellar black holes

- X-ray binaries: estrella + black hole
- más conocidos: SS433, Cyg X-1, GRS 1915+105
- más cercanos GRO J1655–40 o A0620–00 ($\sim$ 1kpc).



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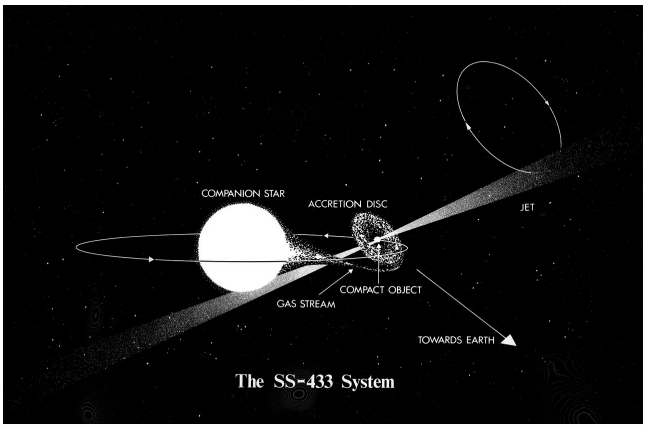
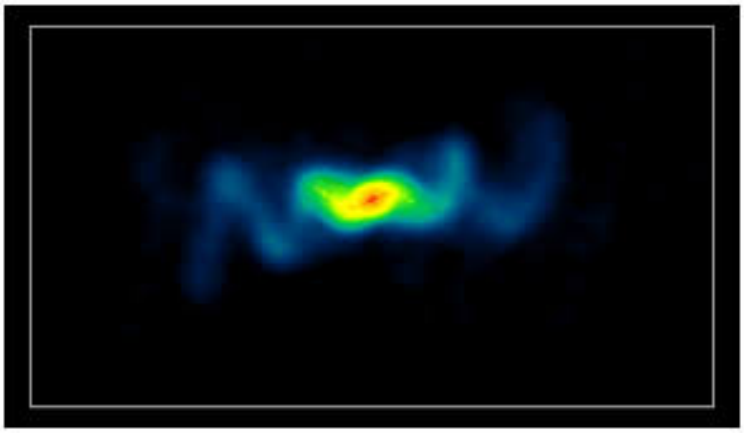
SS433





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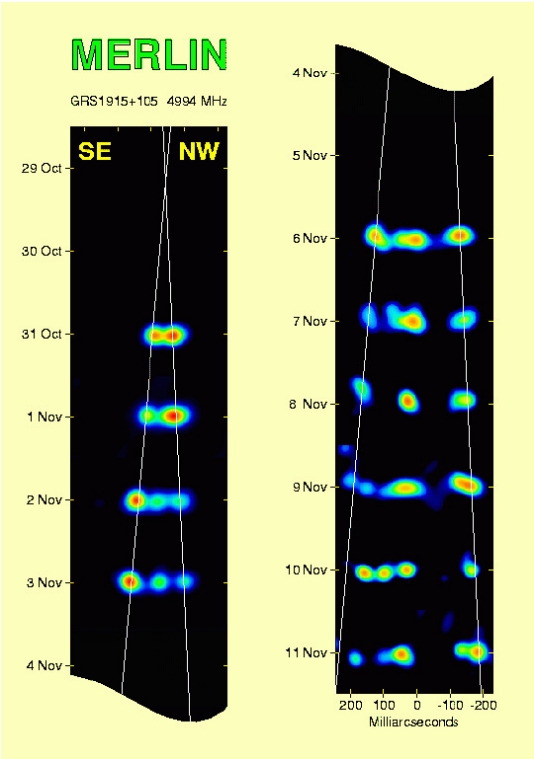
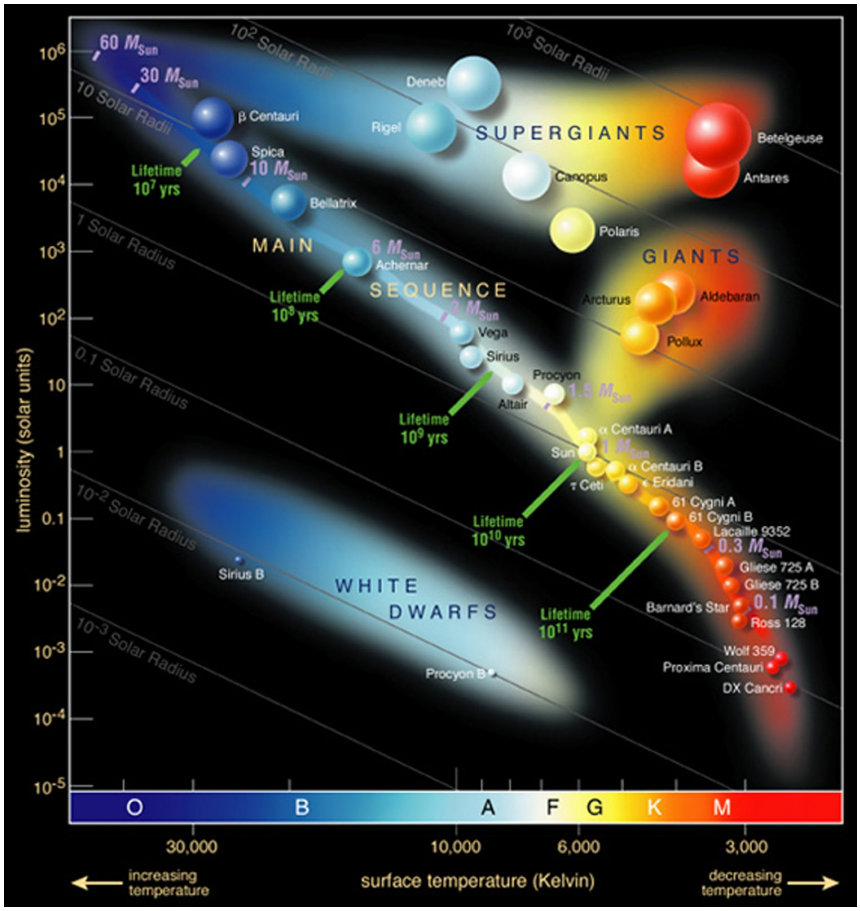
Super luminal jet in GRS1915



Estella MS + $\sim$15 $M_\odot$ black hole. .18

1.5. Diagrama H-R


luminosity (solar units)
surface temperature (Kelvin)
increasing temperature
decreasing temperature
O
B
A
F
G
K
M
30,000
10,000
6,000
3,000
SUPERGIANTS
GIANTS
MAIN SEQUENCE
WHITE DWARFS
Deneb
Rigel
Betelgeuse
Antares
Canopus
Polaris
Arcturus
Aldebaran
Pollux
β Centauri
Spica
Bellatrix
Achernar
Vega
Sirius
Procyon
Altair
α Centauri A
Sun
α Centauri B
τ Ceti
ε Eridani
61 Cygni A
61 Cygni B
Lacaille 9352
Gliese 725 A
Gliese 725 B
Barnard's Star
Ross 128
Wolf 359
Proxima Centauri
DX Cancri
Sirius B
Procyon B
60 M Sun
30 M Sun
10 M Sun
6 M Sun
3 M Sun
1.5 M Sun
1 M Sun
0.3 M Sun
0.1 M Sun
Lifetime 10^7 yrs
Lifetime 10^8 yrs
Lifetime 10^9 yrs
Lifetime 10^10 yrs
Lifetime 10^11 yrs
10^2 Solar Radii
10^3 Solar Radii
10 Solar Radii
1 Solar Radius
0.1 Solar Radius
10^-2 Solar Radius
10^-3 Solar Radius

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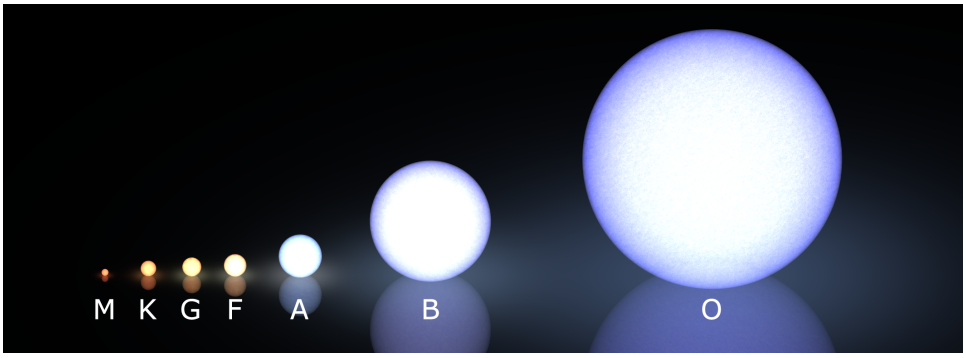
M
K
G
F
A
B
O

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