
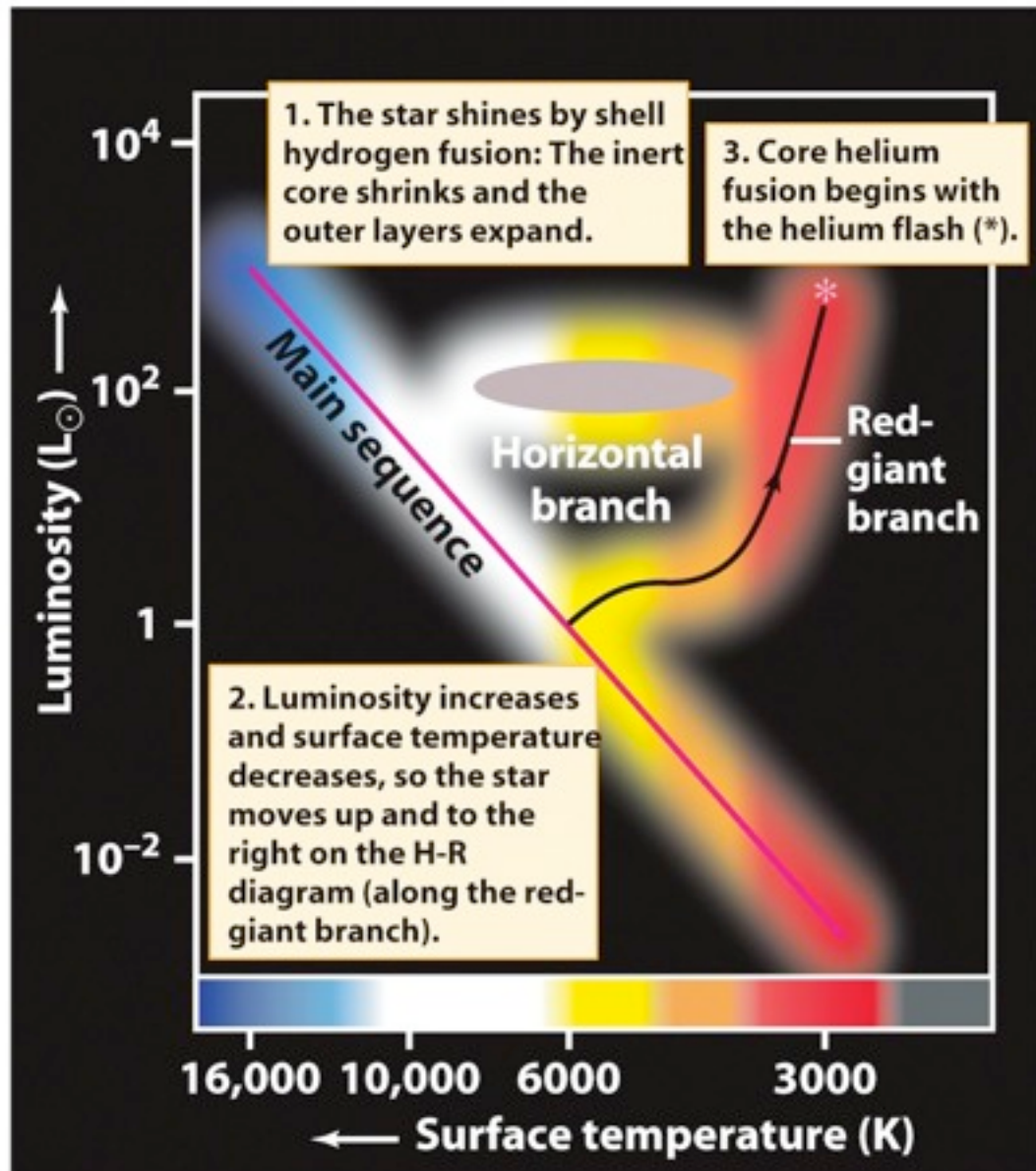


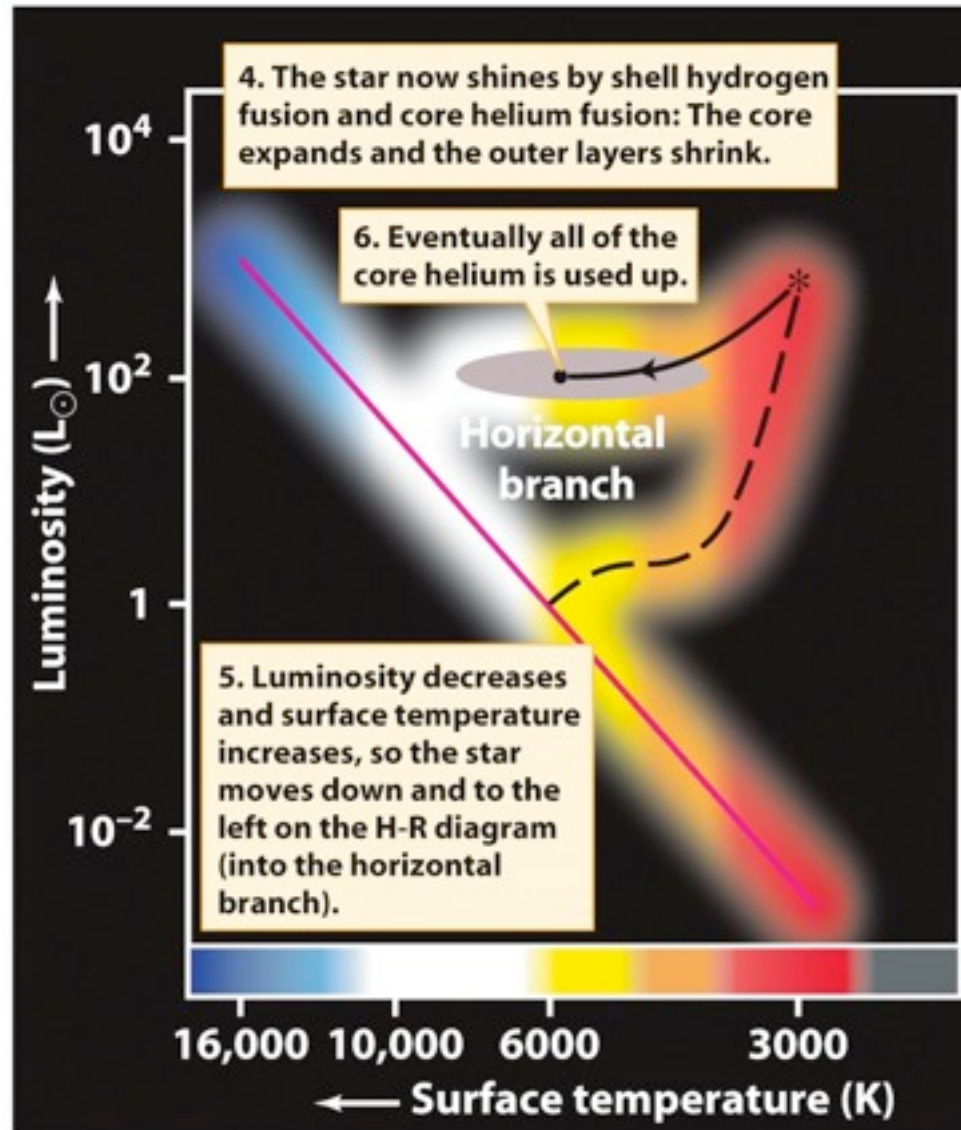
# Astro 220: Galaxies and cosmology



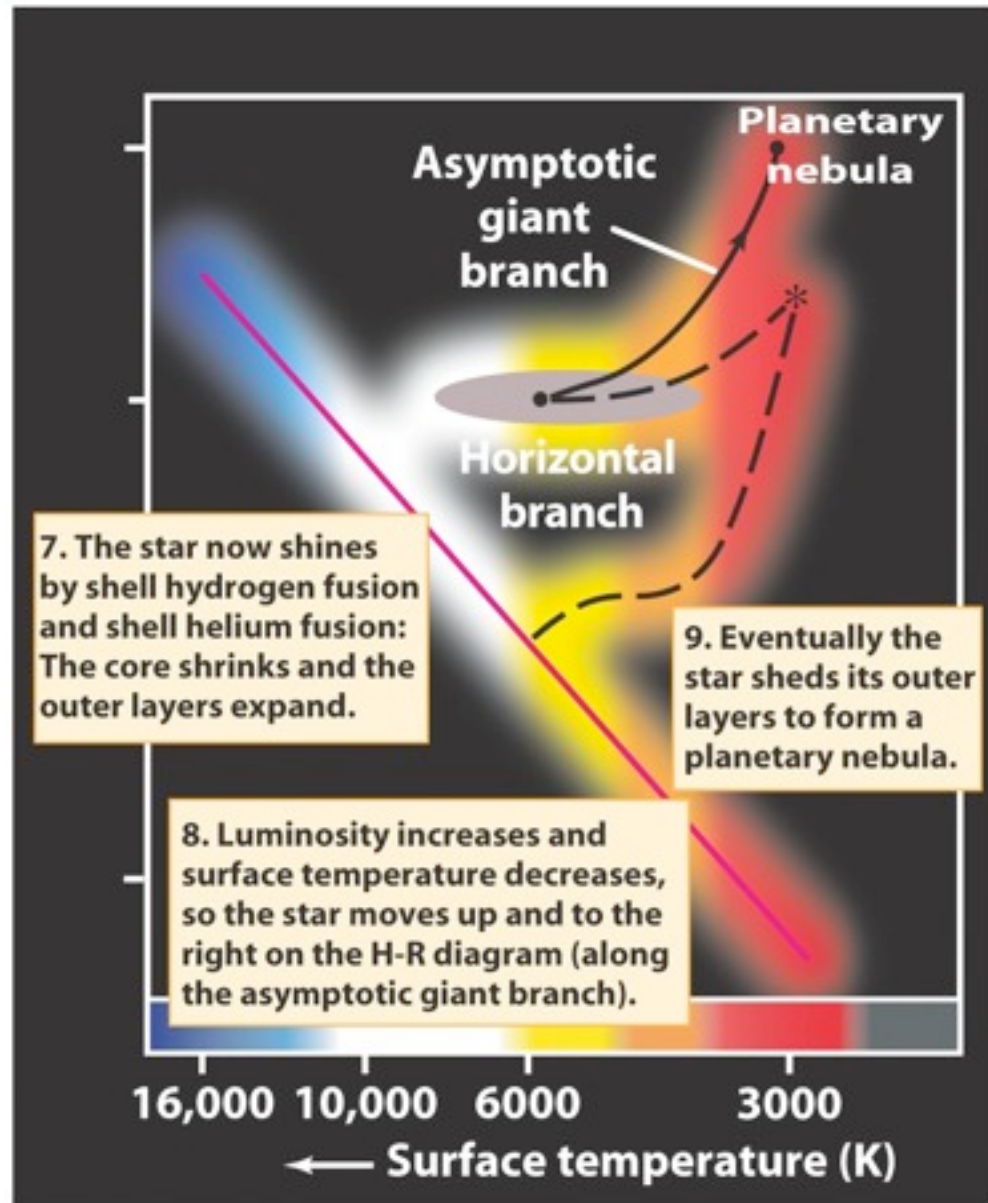
Sep 22, 2010



Before the helium flash: A red-giant star

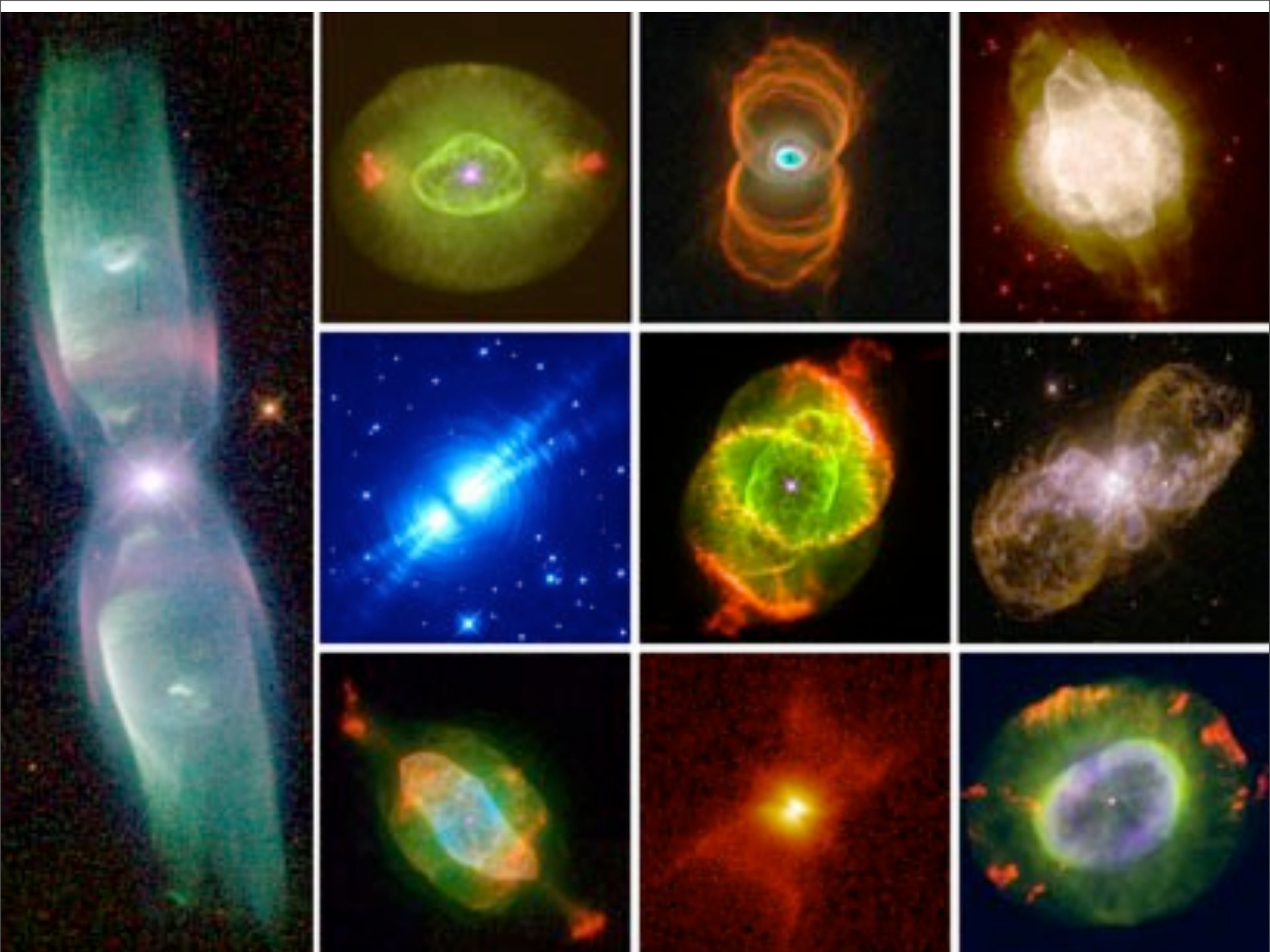


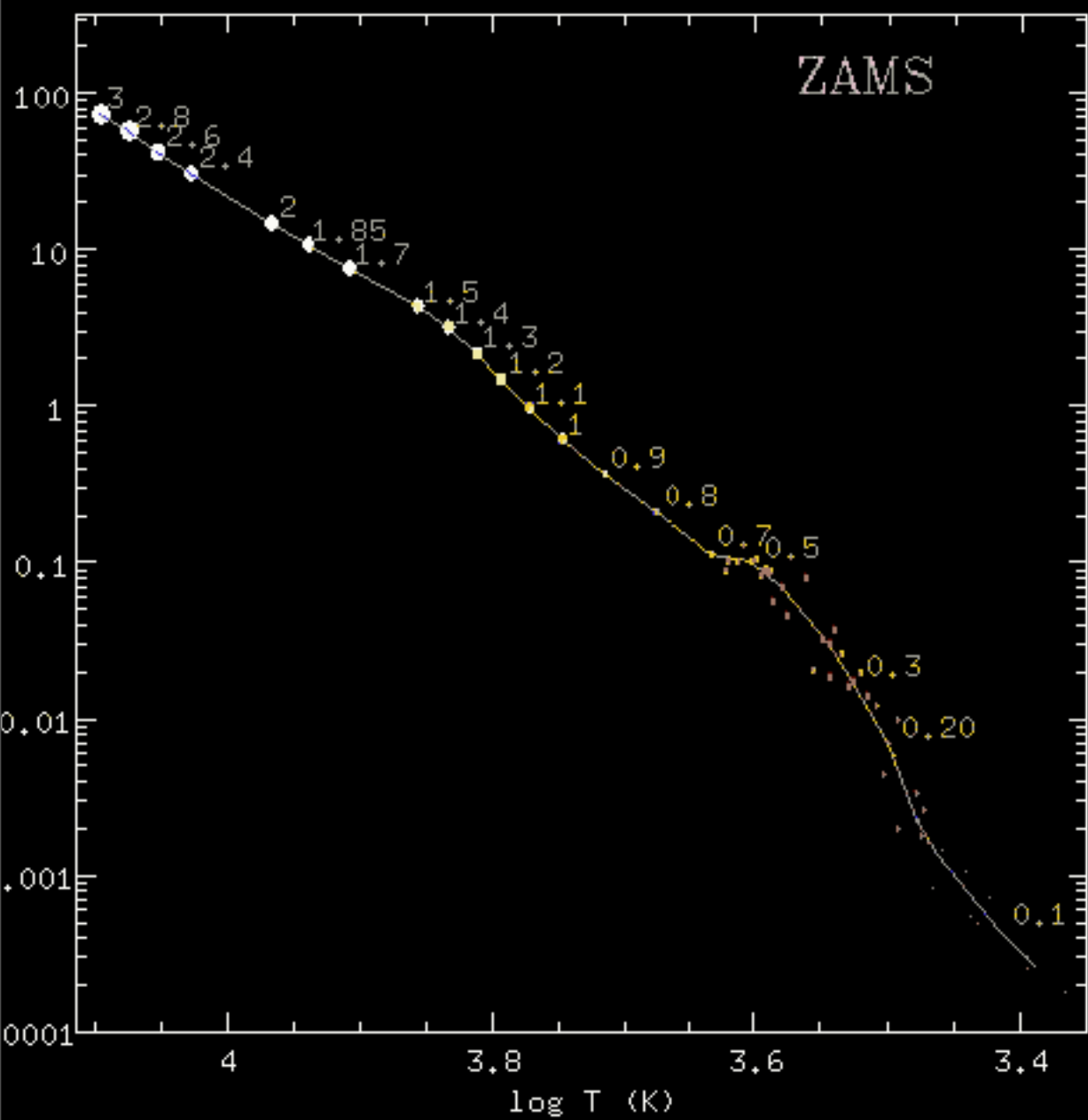
**After the helium flash: A horizontal-branch star**



**After core helium fusion ends: An AGB star**







**2.6**

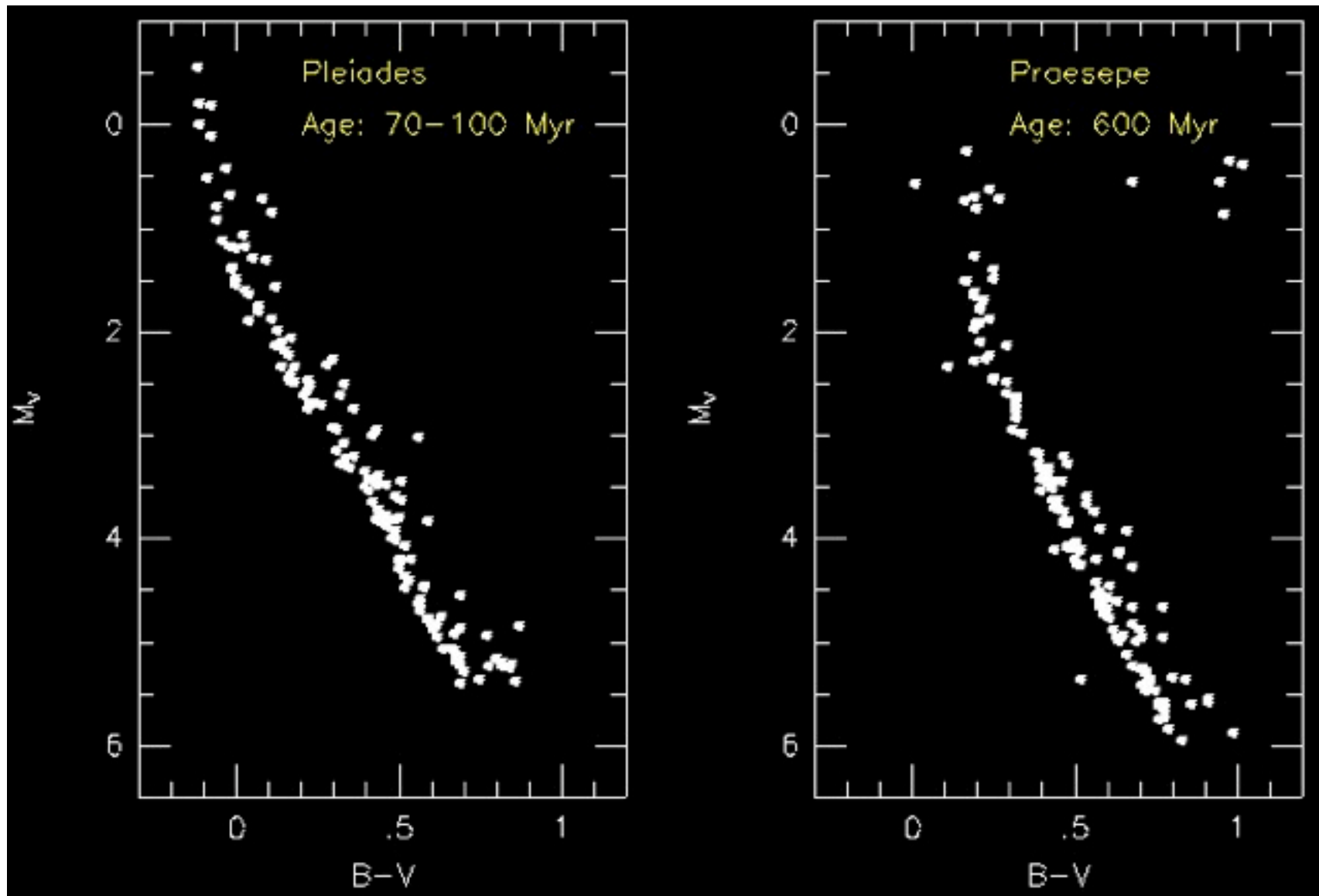


**1.0**

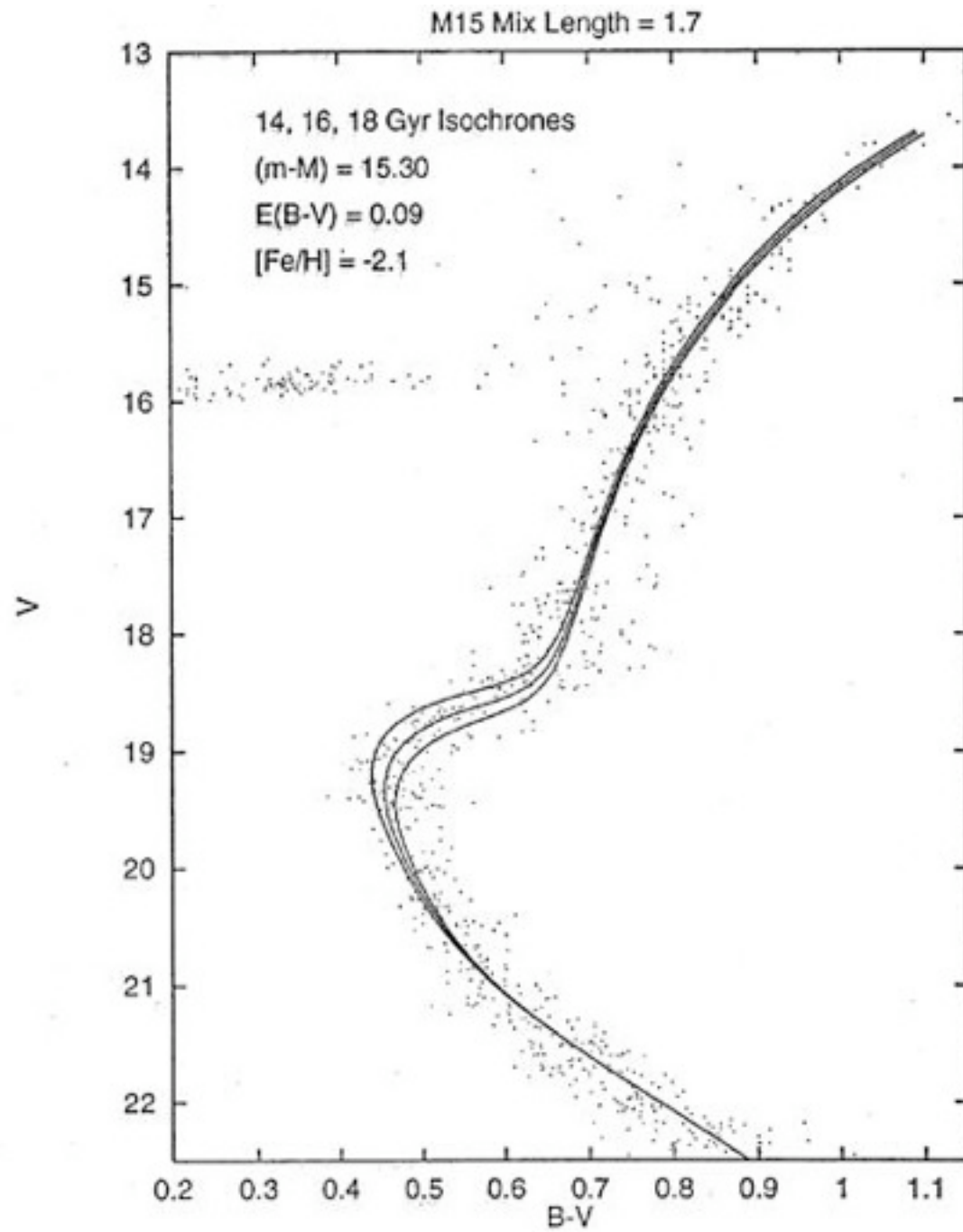


**0.7**

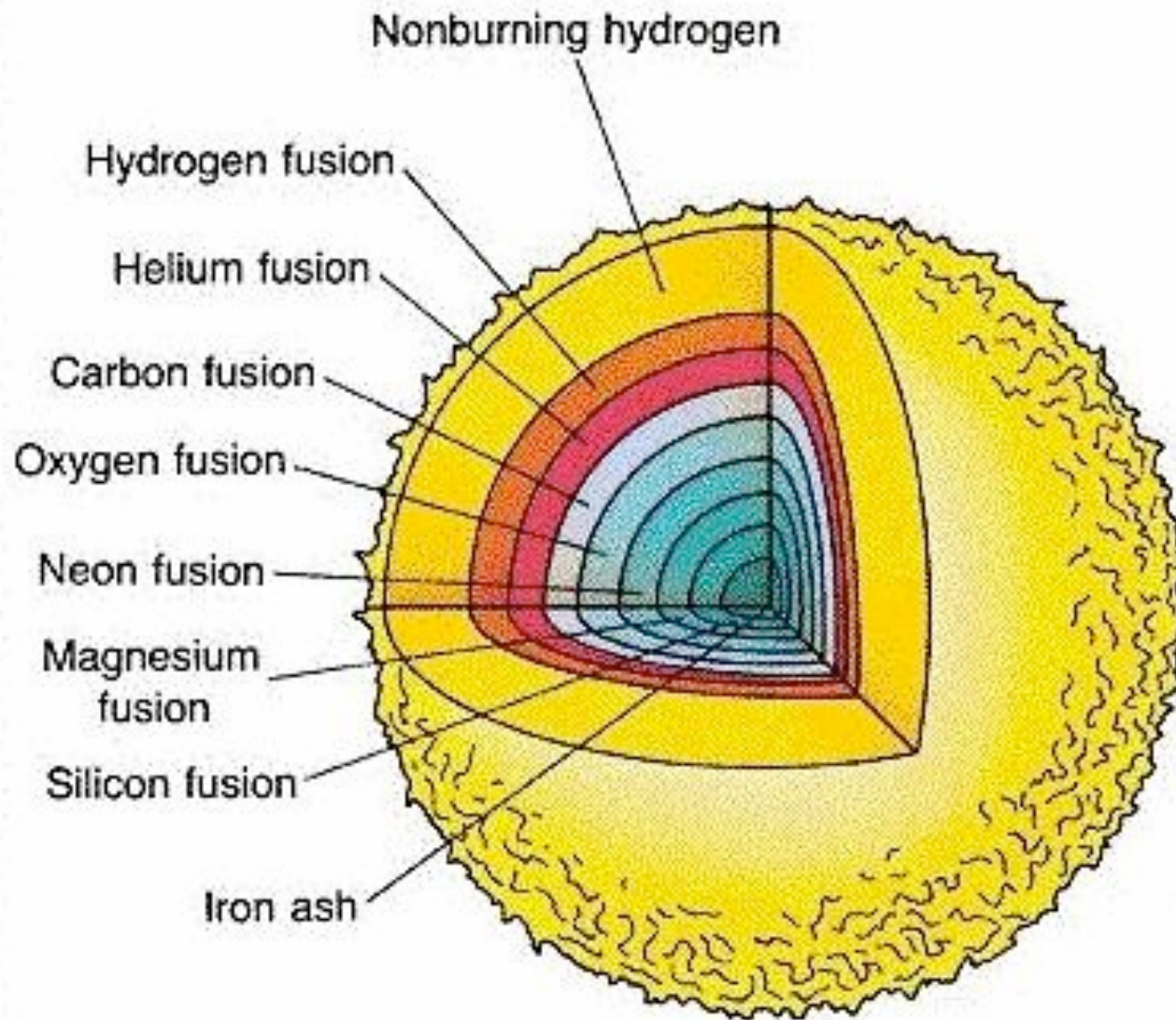




Can determine ages of stars from distribution in HR diagram







Final stages of life of massive star





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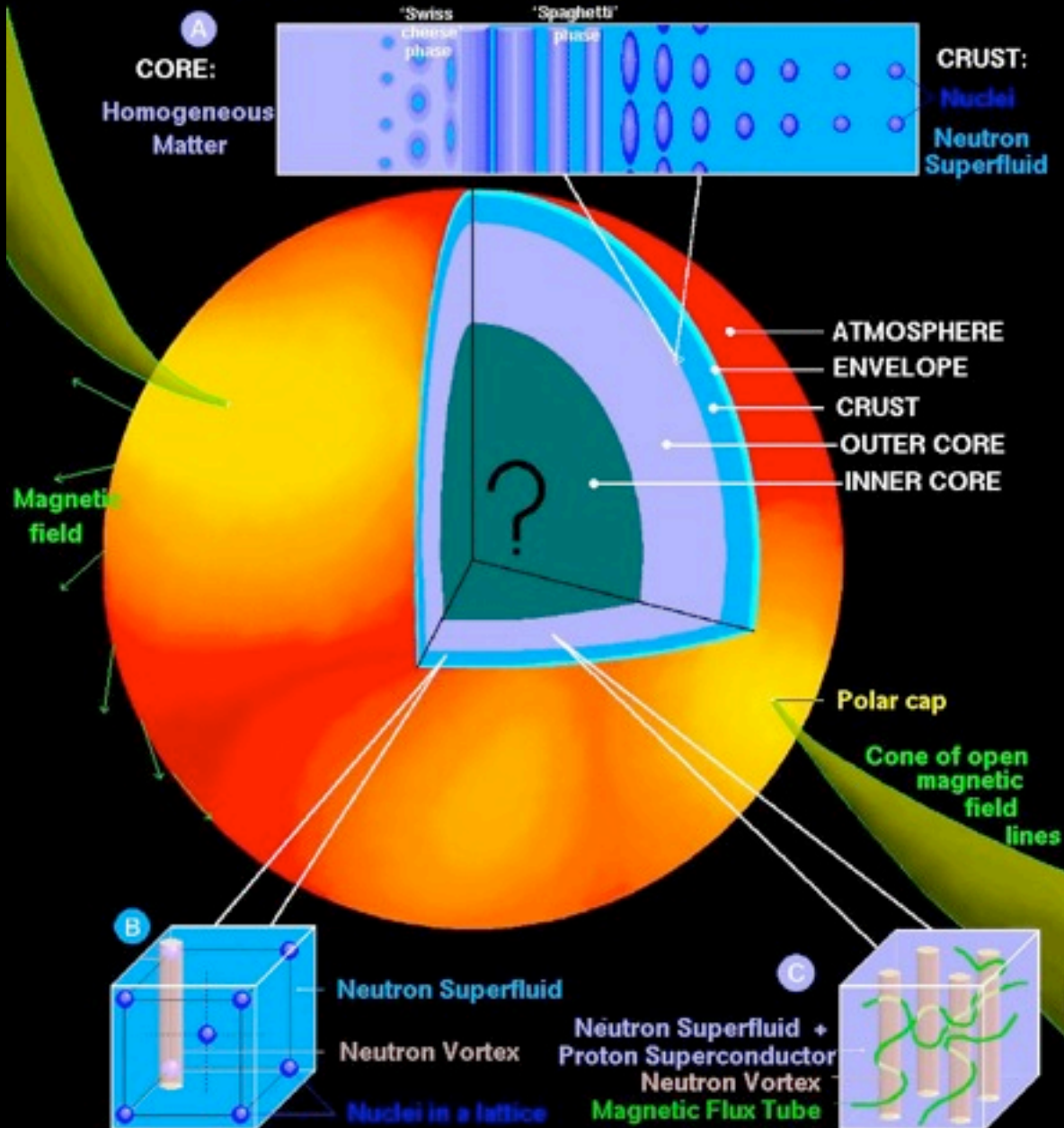
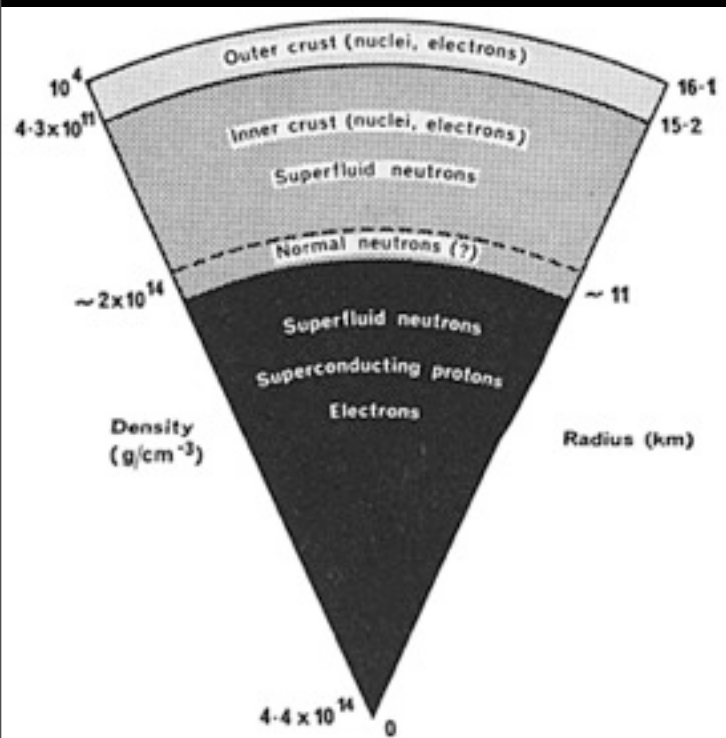


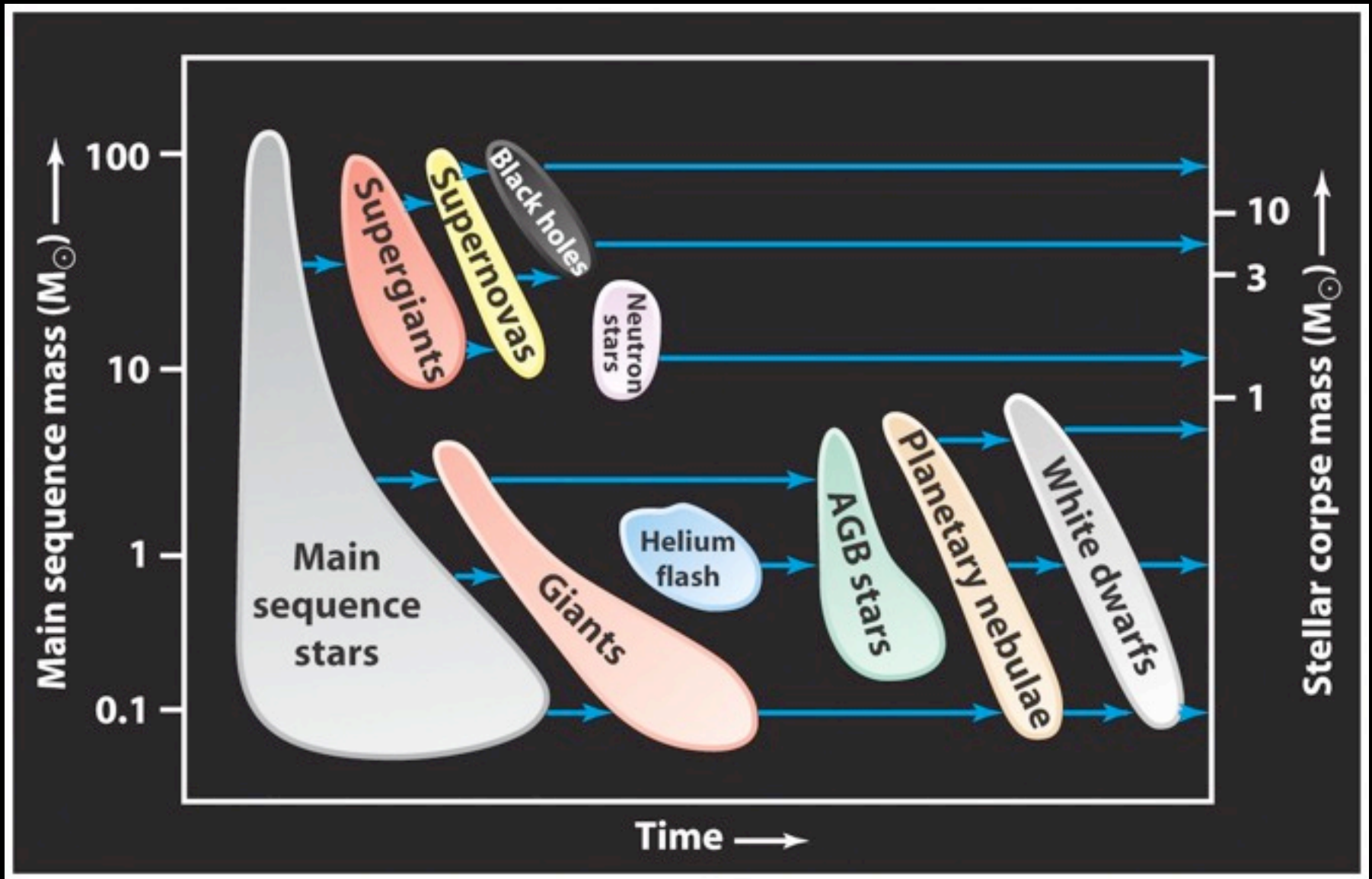


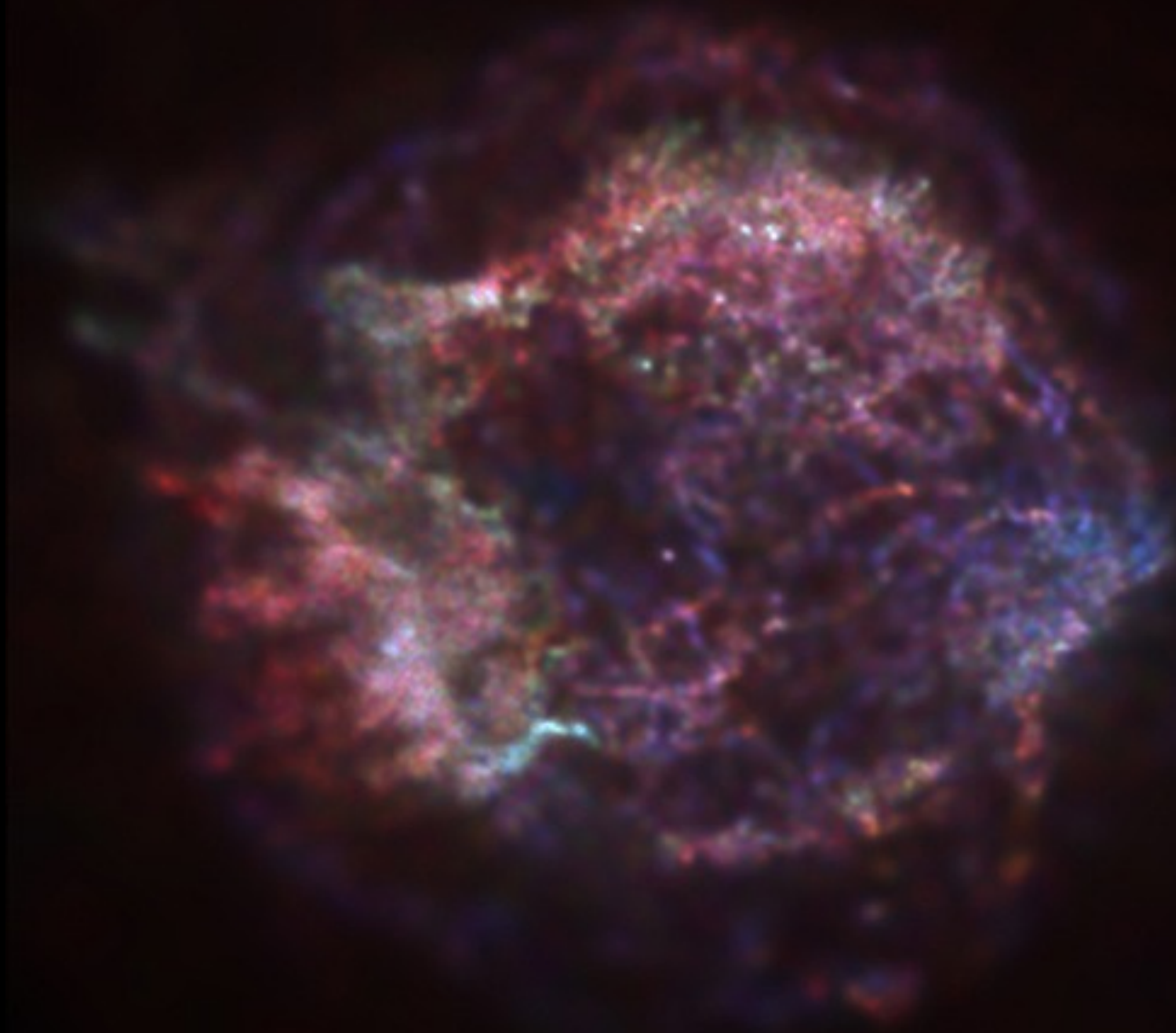
SN 1987A



# A NEUTRON STAR: SURFACE and INTERIOR

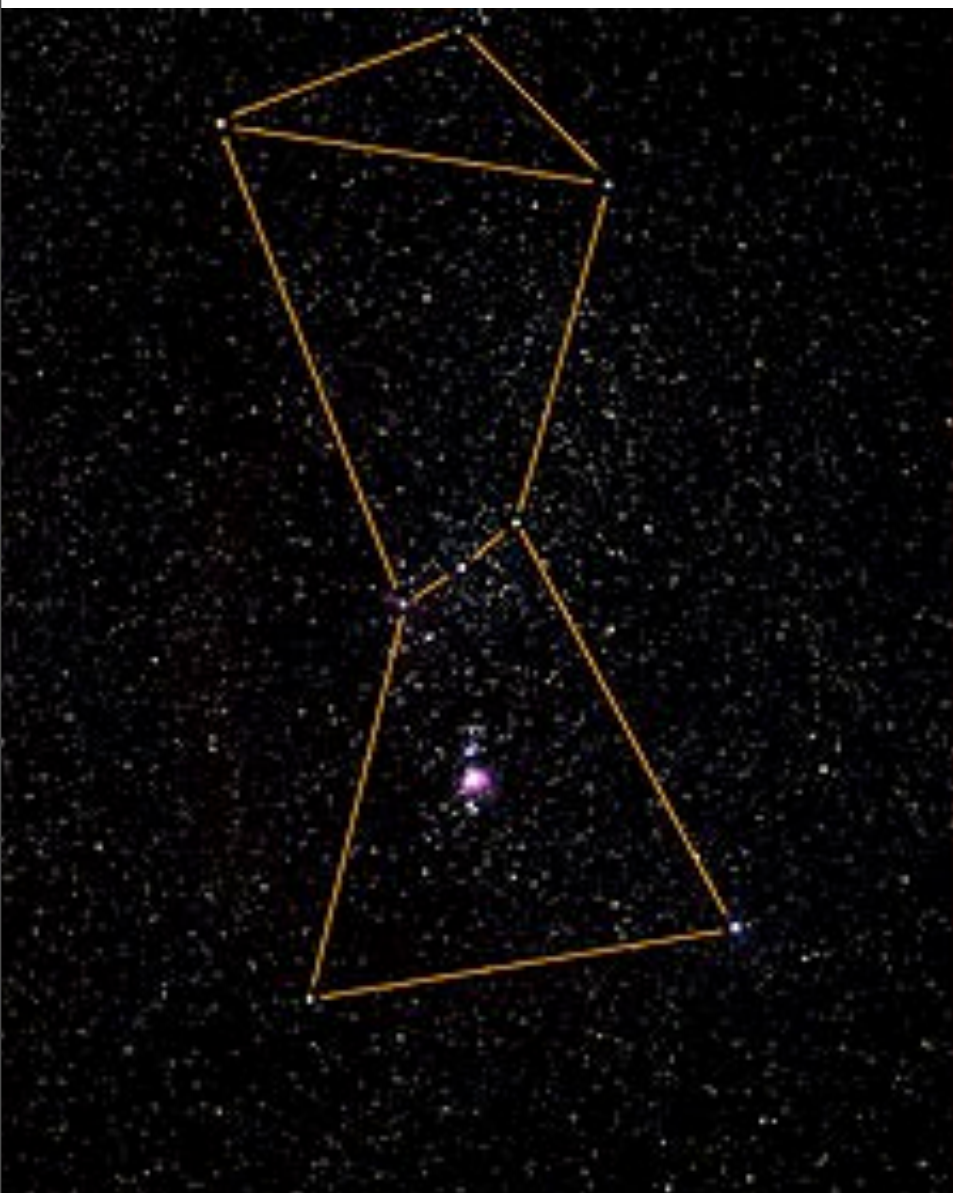






Supernova remnant





Visual:  $\sim 5000$  K



Infrared: 10-100 K

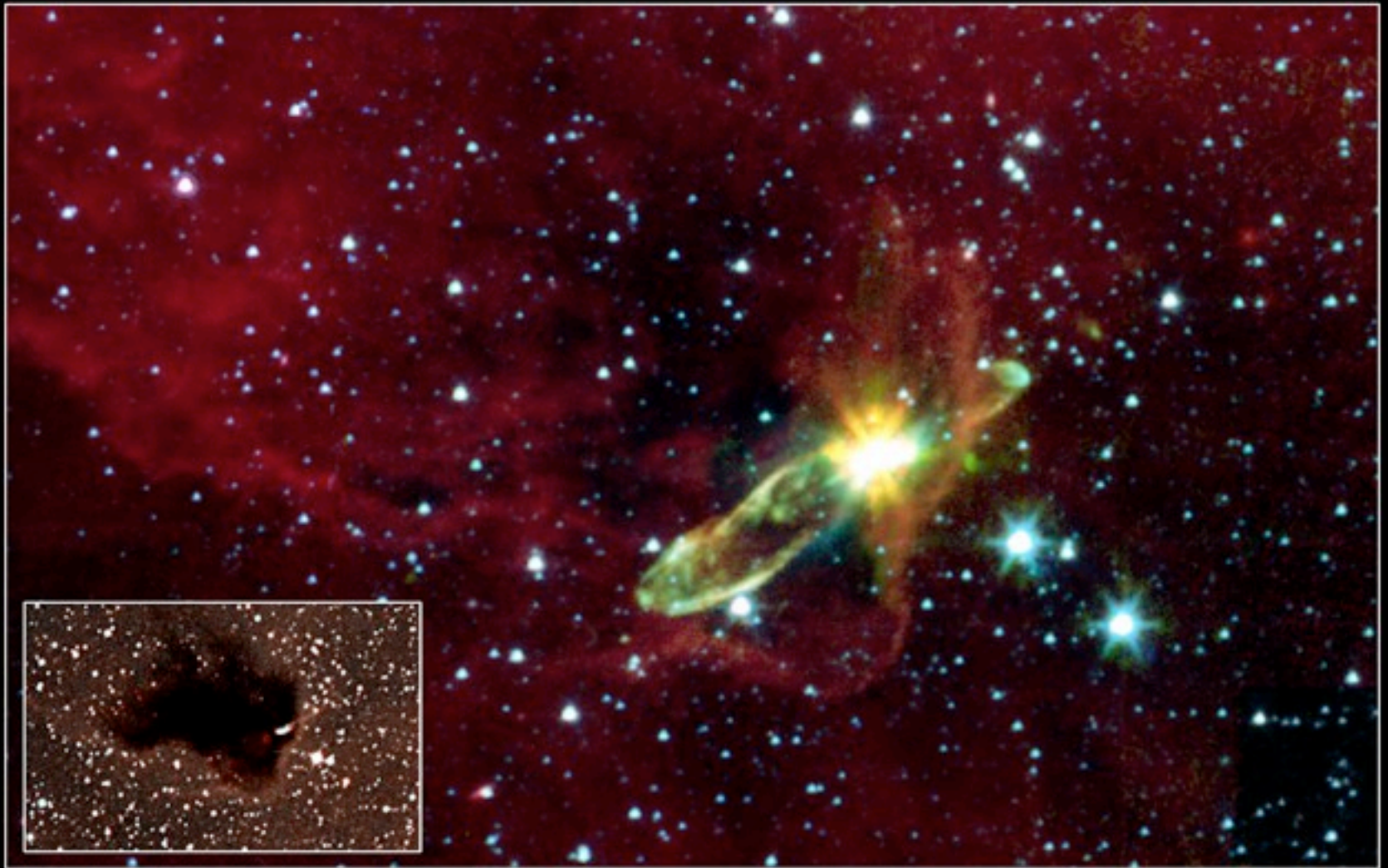




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**Embedded Outflow in HH 46/47**

**Spitzer Space Telescope • IRAC**

Inset: visible light (DSS)

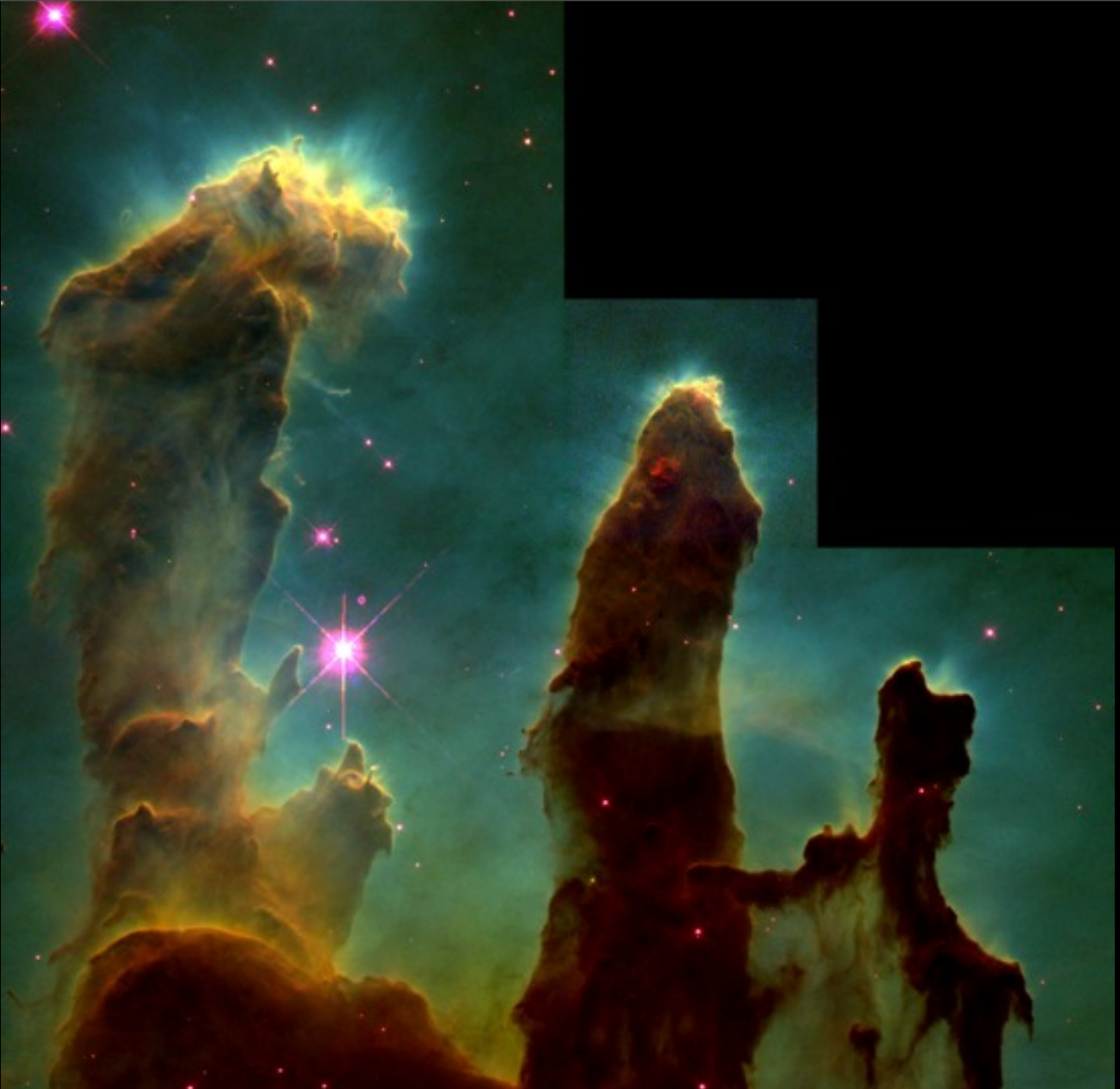
NASA / JPL-Caltech / A. Noriega-Crespo (SSC/Caltech)

ssc2003-06f







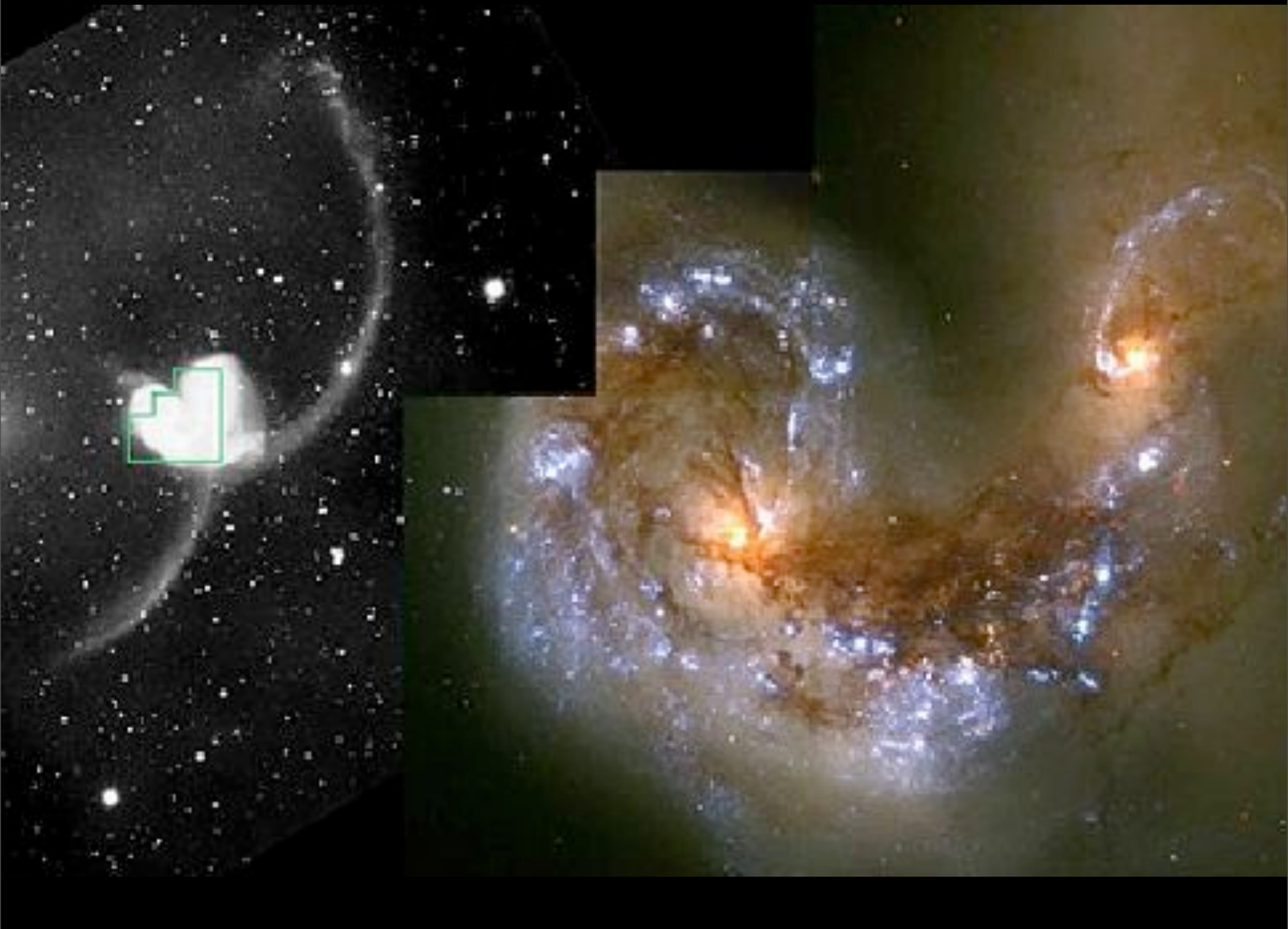


Wednesday, September 22, 2010



Wednesday, September 22, 2010





Wednesday, September 22, 2010