

ASTRO 1020 Lab

L8: Star Clusters & Supernovae

Grading

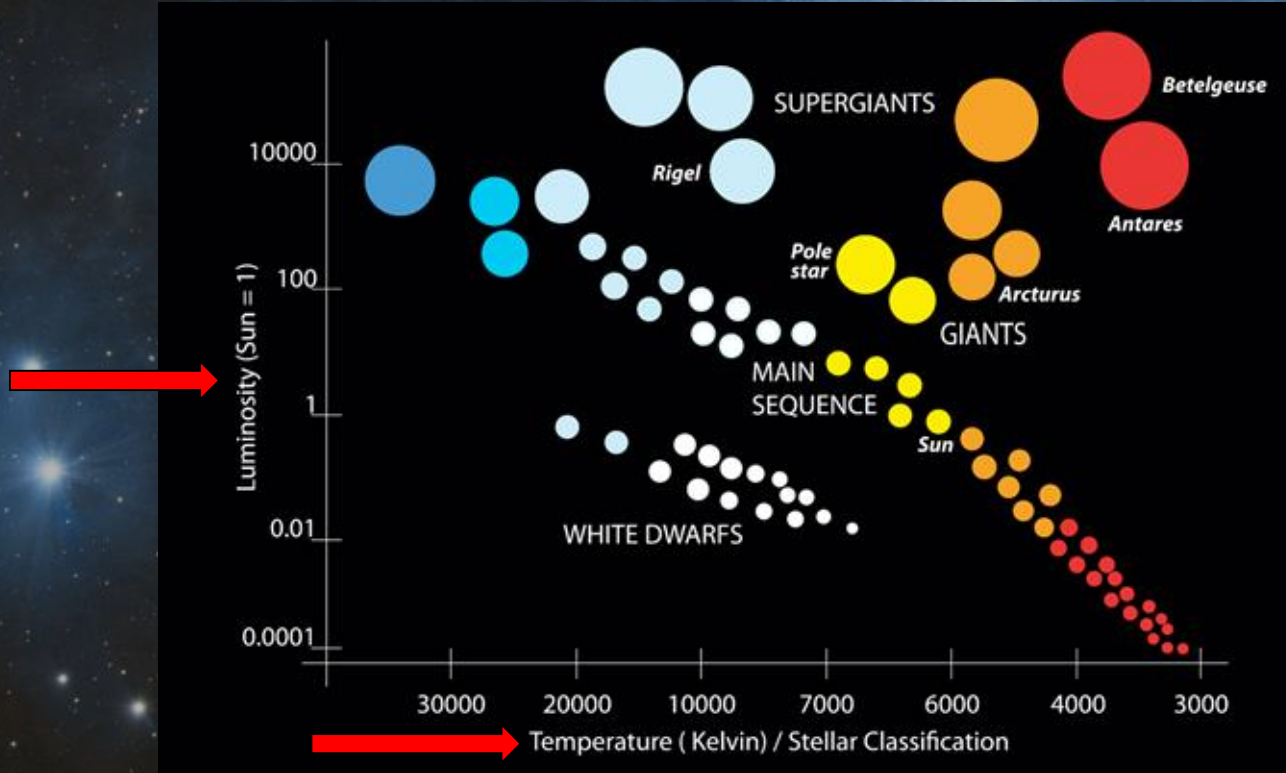
- All labs are scaled to be graded out of 10 points*

Points per question	Description
1.0	A correct answer with units and work shown. Answers that don't require work will be graded on completion
0.8	A correct answer without units or work shown
0.6	An incorrect answer with units and work shown
0.4	An incorrect answer without units or work shown
0.2	Some work shown without an answer
0.0	Not Attempted

Things you need to know for Lab 8

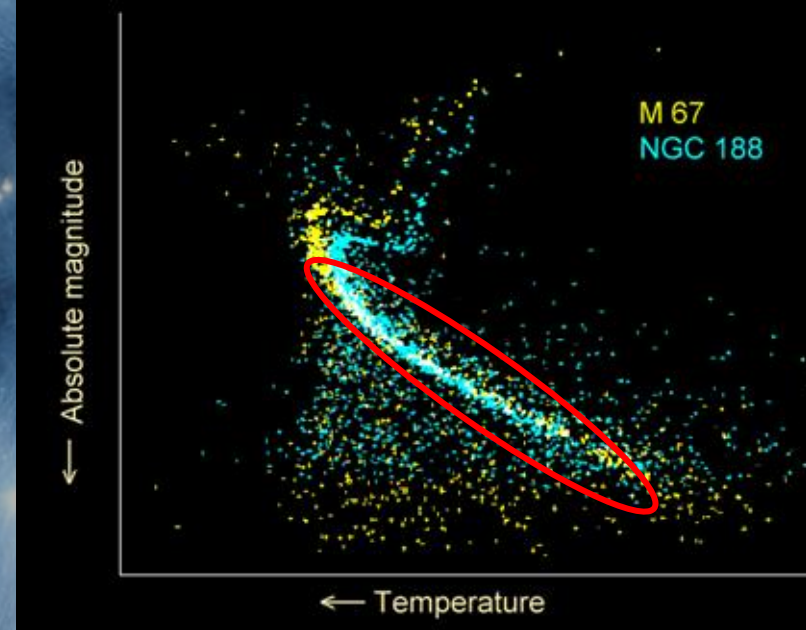
- The Hertzsprung-Russell (HR) Diagram
- Main sequence stellar evolution
- Main sequence turn-off
- Distance modulus
- Supernovae and their light curves

The Hertzsprung-Russell Diagram



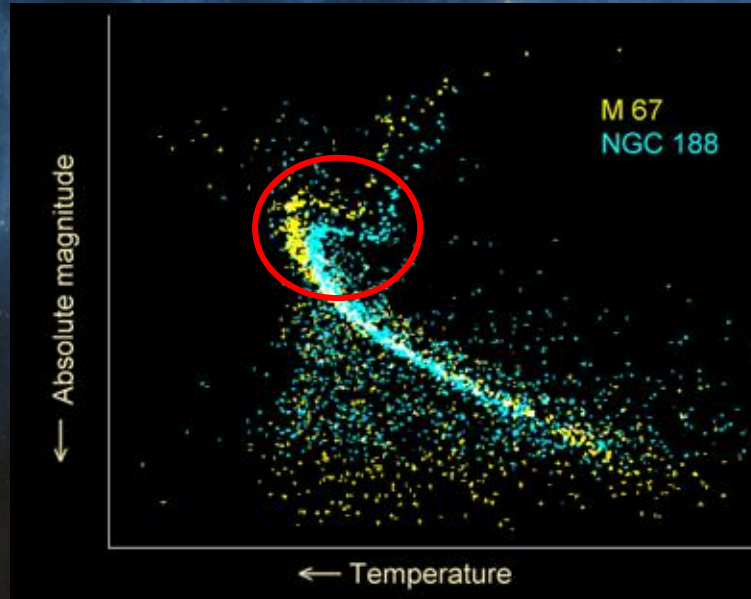
Main Sequence Stellar Evolution

- Longest part of star's lifetime
- Long diagonal on HR diagram
- Sun is on the main sequence
- Can be used to find distance!

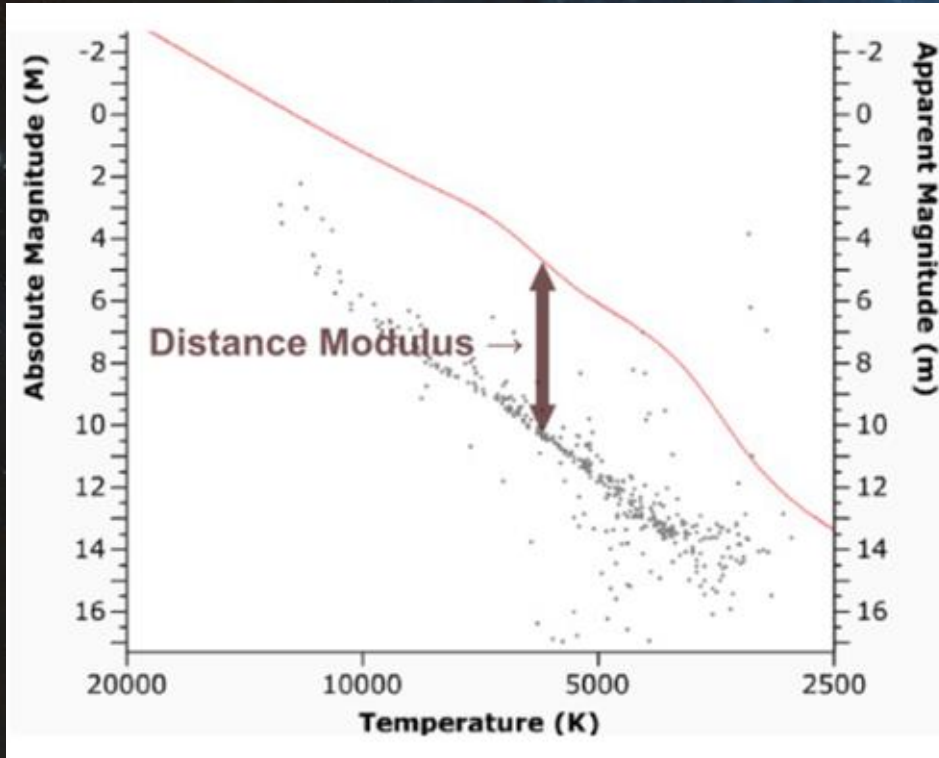


Main Sequence Turn-off

- A star's retirement (gets big and red)
- Seen as a hook on the HR diagram - can determine age!



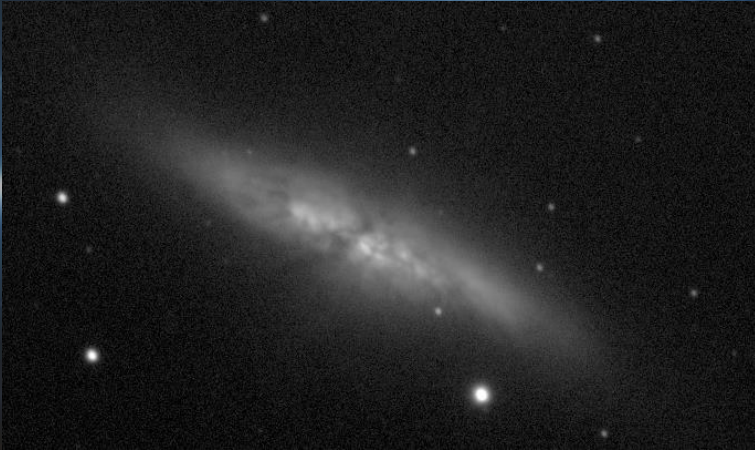
Distance Modulus



$$m - M = -5 + 5 \log_{10} d$$

Supernovae

- Explosive end to the lives of massive stars
- Can outshine their host galaxies
- Their brightness tapers off



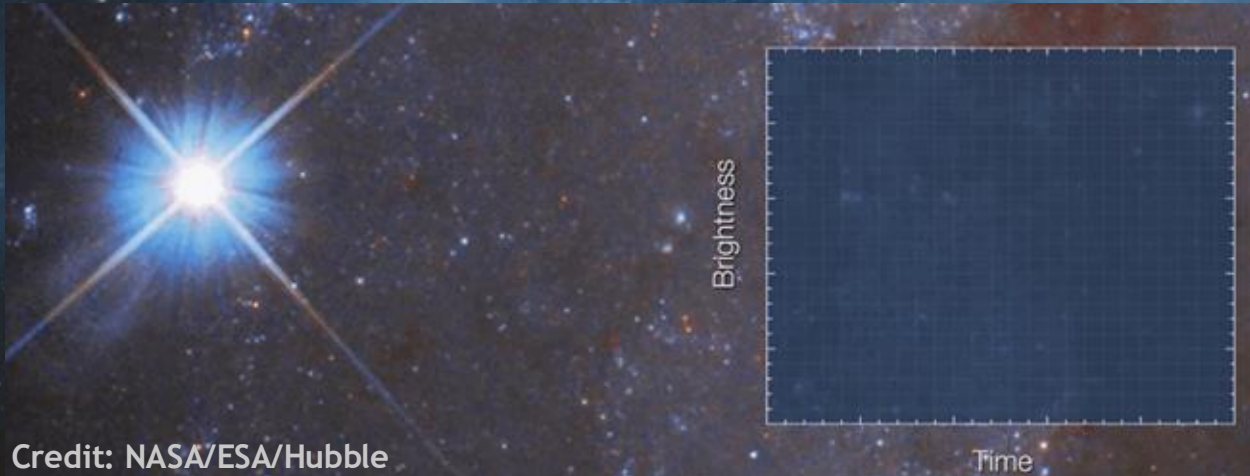
Credit: UCL Observatory



Credit: NASA/ESA

Supernova Lightcurves

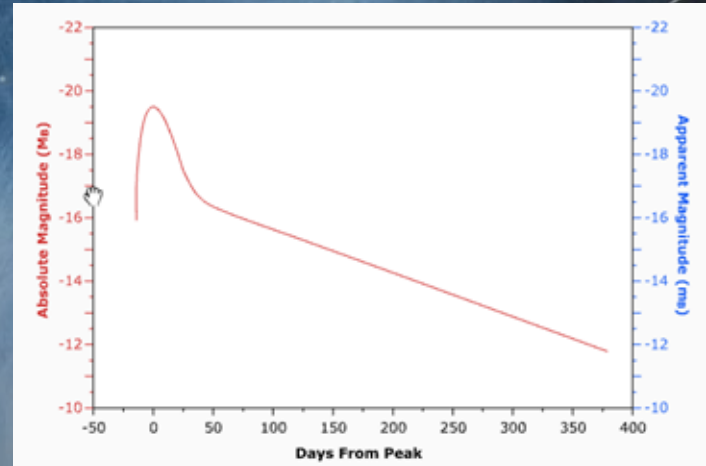
- The light from supernovae eventually dies down
- This “die down time” is predictable
- Can be used to find distances!



Credit: NASA/ESA/Hubble

Supernova Lightcurves

- The light from supernovae eventually dies down
- This “die down time” is predictable
- Can be used to find distances!



The background of the slide is a deep blue space scene. It features a prominent nebula with wispy, glowing blue and white filaments. Scattered throughout the scene are numerous stars of varying sizes and brightness, some appearing as sharp points of light while others have a soft, out-of-focus glow. The overall atmosphere is ethereal and cosmic.

Questions?