# Introductory Astronomy

## Week 5: Stellar Evolution

## Clip 6: The End: Planetary Nebula



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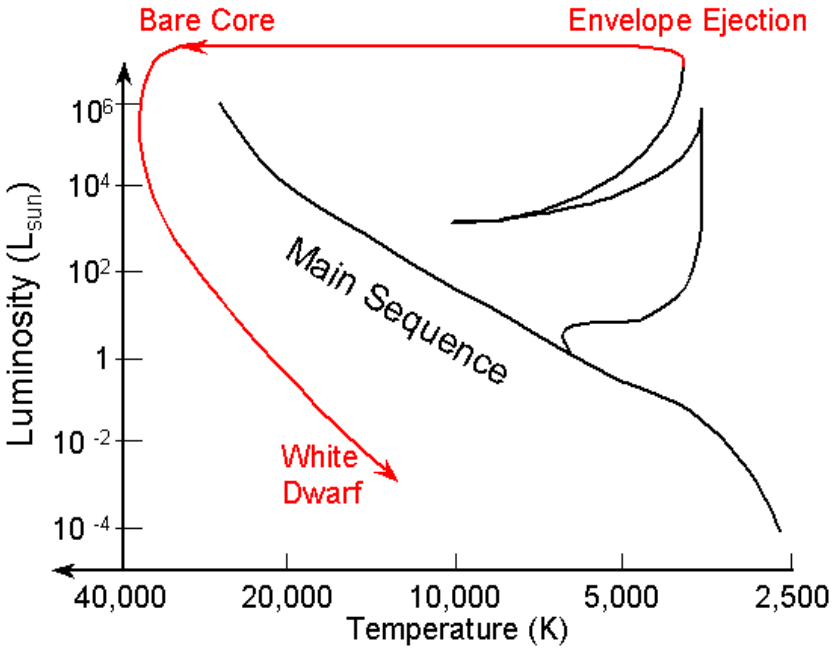
# The End

- Pulses eject envelope exposing inert degenerate CO core
- Initially hot core cools
- Expanding envelope ionized by UV radiation of white dwarf glows as ephemeral planetary nebula



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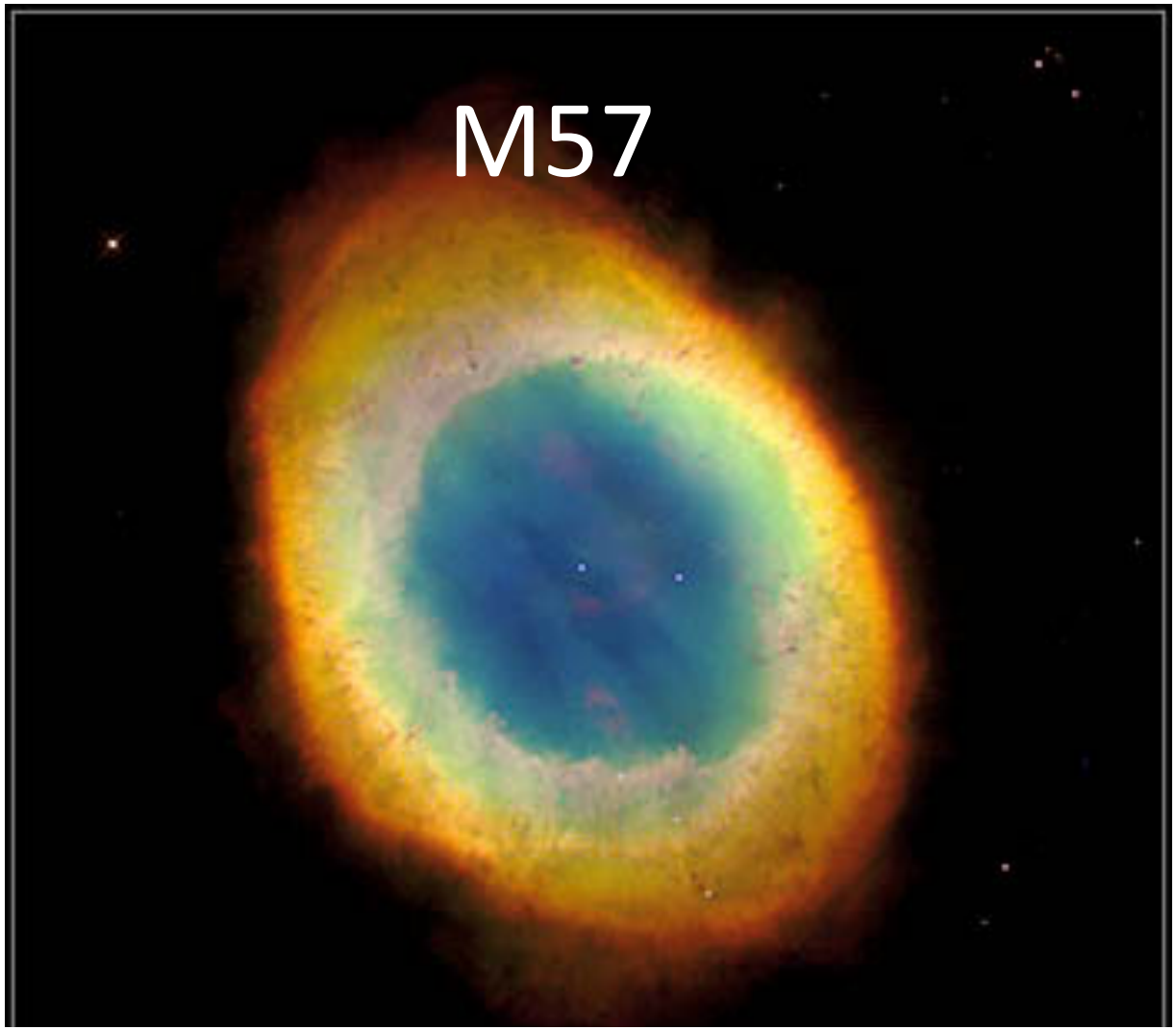




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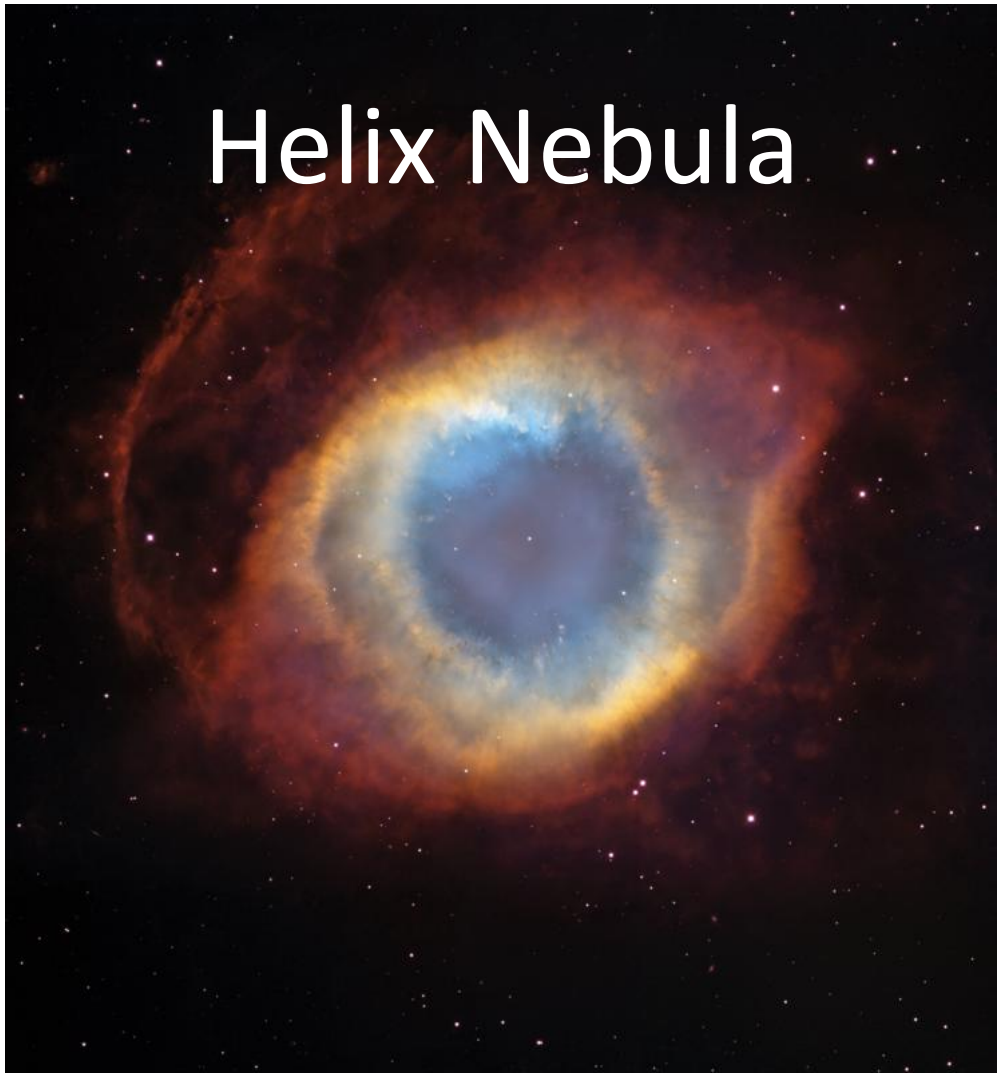
# Helix Nebula





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# Cat’s Eye



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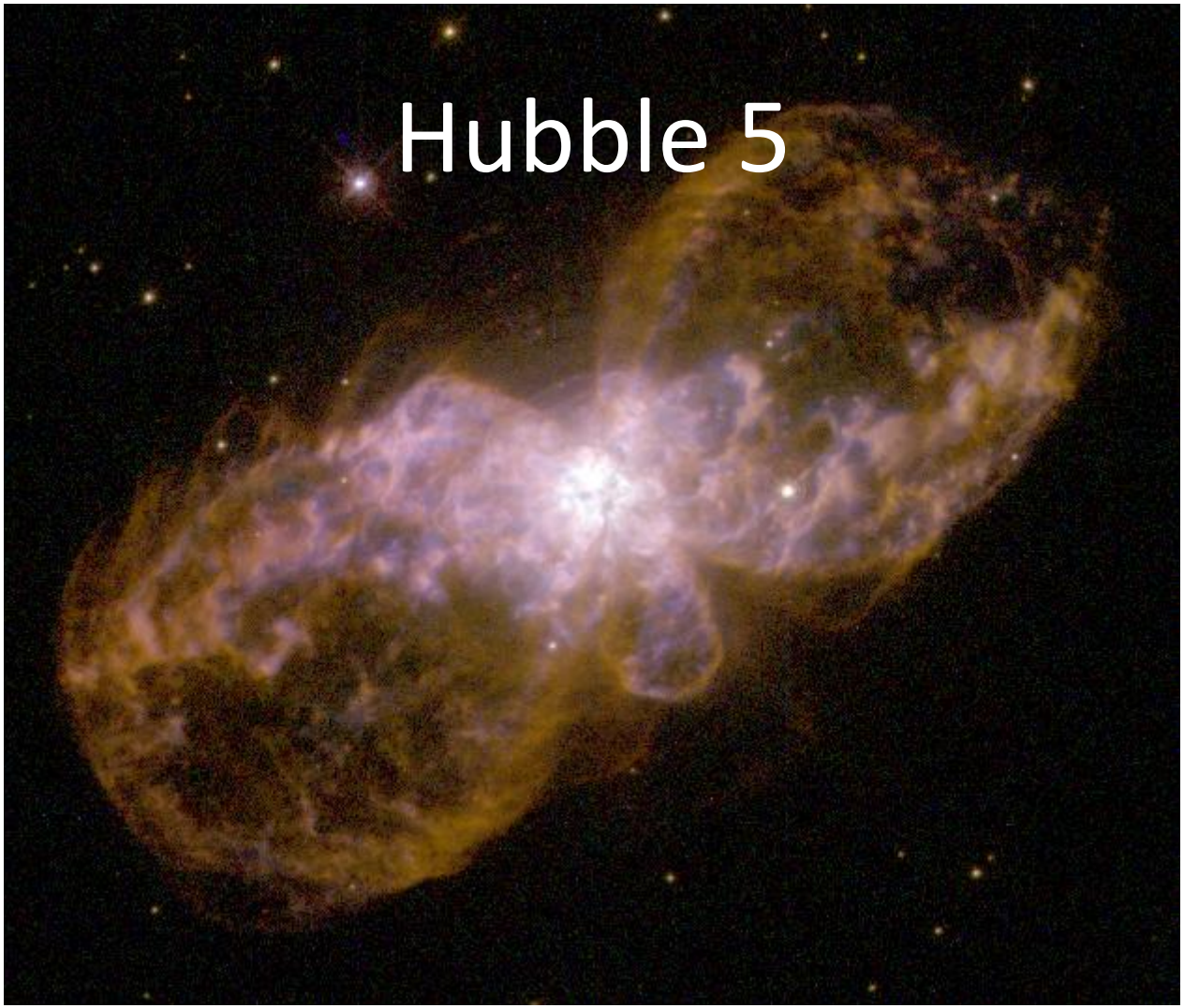




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  http://www.astronomy.ohio-state.edu/~pogge/Lectures/vistas97.html
  http://www.astronomy.ohio-state.edu/~pogge/Ast162/Unit2/lowmass.html
- M57: The Hubble Heritage Team (AURA/STScI/NASA)
  http://hubblesite.org/gallery/album/nebula/pr1999001a/
- Helix Nebula: NASA, ESA, C.R. O'Dell (Vanderbilt University), M. Meixner and P. McCullough (STScI)
  http://hubblesite.org/newscenter/archive/releases/2004/32/image/d/
- Cat's Eye Nebula: NASA, ESA, HEIC, and The Hubble Heritage Team (STScI/AURA)
  http://hubblesite.org/gallery/album/pr2004027a/
- Hubble 5: Bruce Balick (University of Washington), Vincent Icke (Leiden University, The Netherlands), Garrelt Mellema (Stockholm University), and NASA
  http://hubblesite.org/newscenter/archive/releases/1997/38/image/f/
- NGC 5189: NASA, ESA, and the Hubble Heritage Team (STScI/AURA)
  http://hubblesite.org/newscenter/archive/releases/nebula/2012/49/



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