Stars, Galaxies & the Universe Announcements

- HW#7 due Friday by 5 pm! (available Tuesday)
- In class Quiz #8 on Monday (over Black Holes!)

• Exam #2 next week (Wednesday)

- Review sheet and study guide posted by Thursday
- Use office hours and Astronomy Tutorial hours
- Covers material since Exam #1 (plus background material)

Stars, Galaxies & the Universe Lecture Outline

- White dwarf properties and examples of detection
 End of life for Massive Stars
 - Supernova explosion (core collapse)
 - Supernova remnants













White dwarf

- Star burns up rest of hydrogen
- Nothing remains but degenerate core of Oxygen and Carbon
- "White dwarf" cools but does not contract because core is degenerate
- No energy from fusion (unless!!...), no energy from gravitational contraction
- White dwarf slowly fades away





















High-Mass Star Core collapse

- Iron core is degenerate
- · Core grows until it is too heavy to support itself
- Core collapses, density increases, normal iron nuclei are converted into neutrons with the emission of neutrinos
- Core collapse stops, neutron star is formed
- Rest of the star collapses in on the core, but bounces off the new neutron star (also pushed outwards by the neutrinos)





























