

23.S: The Death of Stars (Summary)

Articles For Further Exploration

Death of Stars

Hillebrandt, W., et al. "How To Blow Up a Star." *Scientific American* (October 2006): 42. On supernova mechanisms.

Irion, R. "Pursuing the Most Extreme Stars." *Astronomy* (January 1999): 48. On pulsars.

Kalirai, J. "New Light on Our Sun's Fate." *Astronomy* (February 2014): 44. What will happen to stars like our Sun between the main sequence and the white dwarf stages.

Kirshner, R. "Supernova 1987A: The First Ten Years." *Sky & Telescope* (February 1997): 35.

Maurer, S. "Taking the Pulse of Neutron Stars." *Sky & Telescope* (August 2001): 32. Review of recent ideas and observations of pulsars.

Zimmerman, R. "Into the Maelstrom." *Astronomy* (November 1998): 44. About the Crab Nebula.

Gamma-Ray Bursts

Fox, D. & Racusin, J. "The Brightest Burst." *Sky & Telescope* (January 2009): 34. Nice summary of the brightest burst observed so far, and what we have learned from it.

Nadis, S. "Do Cosmic Flashes Reveal Secrets of the Infant Universe?" *Astronomy* (June 2008): 34. On different types of gamma-ray bursts and what we can learn from them.

Naeye, R. "Dissecting the Bursts of Doom." *Sky & Telescope* (August 2006): 30. Excellent review of gamma-ray bursts—how we discovered them, what they might be, and what they can be used for in probing the universe.

Zimmerman, R. "Speed Matters." *Astronomy* (May 2000): 36. On the quick-alert networks for finding afterglows.

Zimmerman, R. "Witness to Cosmic Collisions." *Astronomy* (July 2006): 44. On the Swift mission and what it is teaching astronomers about gamma-ray bursts.

Websites

Death of Stars

Crab Nebula: chandra.harvard.edu/xray_sour...crab/crab.html. A short, colorfully written introduction to the history and science involving the best-known supernova remnant.

Introduction to Neutron Stars: <https://www.astro.umd.edu/~miller/nstar.html>. Coleman Miller of the University of Maryland maintains this site, which goes from easy to hard as you get into it, but it has lots of good information about corpses of massive stars.

Introduction to Pulsars (by Maryam Hobbs at the Australia National Telescope Facility): www.atnf.csiro.au/outreach/ed...ars/index.html.

Magnetars, Soft Gamma Repeaters, and Very Strong Magnetic Fields: <http://solomon.as.utexas.edu/magnetar.html>. Robert Duncan, one of the originators of the idea of magnetars, assembled this site some years ago.

Gamma-Ray Bursts

Brief Intro to Gamma-Ray Bursts (from PBS' *Seeing in the Dark*): www.pbs.org/seeinginthedark/a...ay-bursts.html.

Discovery of Gamma-ray Bursts: science.nasa.gov/science-news.../ast19sep97_2/.

Gamma-Ray Bursts: Introduction to a Mystery (at NASA's Imagine the Universe site): imagine.gsfc.nasa.gov/docs/sc...l1/bursts.html.

Introduction from the *Swift* Satellite Site: swift.sonoma.edu/about_swift/grbs.html.

Missions to Detect and Learn More about Gamma-ray Bursts:

- Fermi Space Telescope: <http://fermi.gsfc.nasa.gov/public/>.

- *INTEGRAL* Spacecraft: www.esa.int/science/integral.
- *SWIFT* Spacecraft: swift.sonoma.edu/.

Videos

Death of Stars

BBC interview with Antony Hewish: <http://www.bbc.co.uk/archive/scientists/10608.shtml>. (40:54).

Black Widow Pulsars: The Vengeful Corpses of Stars: https://www.youtube.com/watch?v=Fn-3G_N0hy4. A public talk in the Silicon Valley Astronomy Lecture Series by Dr. Roger Romani (Stanford University) (1:01:47).

Hubblecast 64: It all ends with a bang!: <http://www.spacetelescope.org/videos/hubblecast64a/>. HubbleCast Program introducing Supernovae with Dr. Joe Liske (9:48).

Space Movie Reveals Shocking Secrets of the Crab Pulsar: <http://hubblesite.org/newscenter/arc...02/24/video/c/>. A sequence of Hubble and Chandra Space Telescope images of the central regions of the Crab Nebula have been assembled into a very brief movie accompanied by animation showing how the pulsar affects its environment; it comes with some useful background material (40:06).

Gamma-Ray Bursts

Gamma-Ray Bursts: The Biggest Explosions Since the Big Bang!: https://www.youtube.com/watch?v=ePo_EdgV764. Edo Berge in a popular-level lecture at Harvard (58:50).

Gamma-Ray Bursts: Flashes in the Sky: <https://www.youtube.com/watch?v=23EhcAP3O8Q>. American Museum of Natural History Science Bulletin on the *Swift* satellite (5:59).

Overview Animation of Gamma-Ray Burst: news.psu.edu/video/296729/201...amma-ray-burst. Brief Animation of what causes a long-duration gamma-ray burst (0:55).

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