



A High-energy Life

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My Mom and the Stars



- I first learned about the stars from my Mom
- She taught me the constellations on camping trips with our girl scout troop
- And so I started looking up at the night sky in wonder...

Home, Sweet Home?

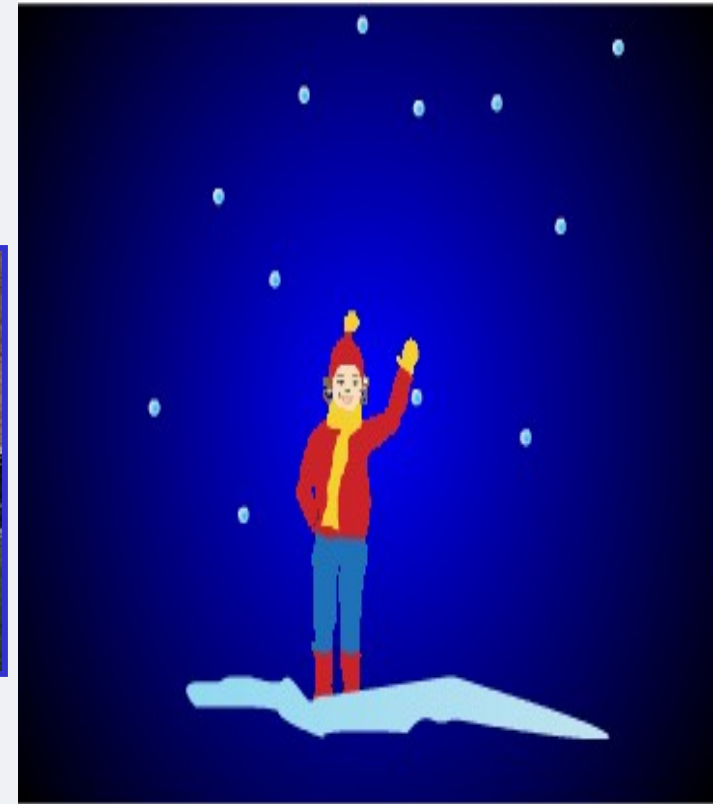
- Growing up in Buffalo, we didn't see the sky too often - too much snow!



A young skywatcher...



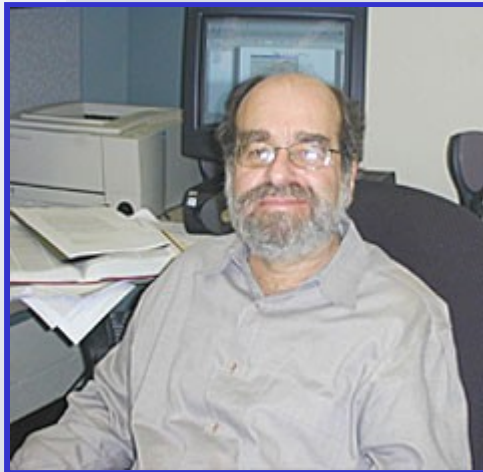
Sweet Home High School



My childhood

College at Brandeis U. (1971-1975)

- I was a physical chemist, with a double major in physics
- I studied the Belusov-Zhabotinsky oscillating reaction



Prof. Irv Epstein



Non-linear chemical
dynamics

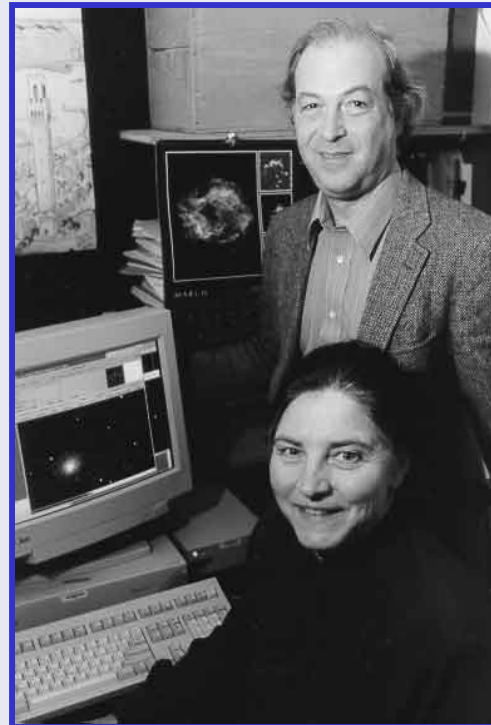


Harvard -Smithsonian Center for Astrophysics (1975-1977)

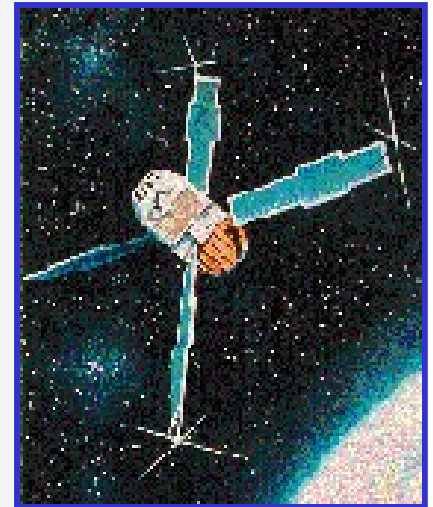
- Analyzed data from Uhuru – first x-ray satellite



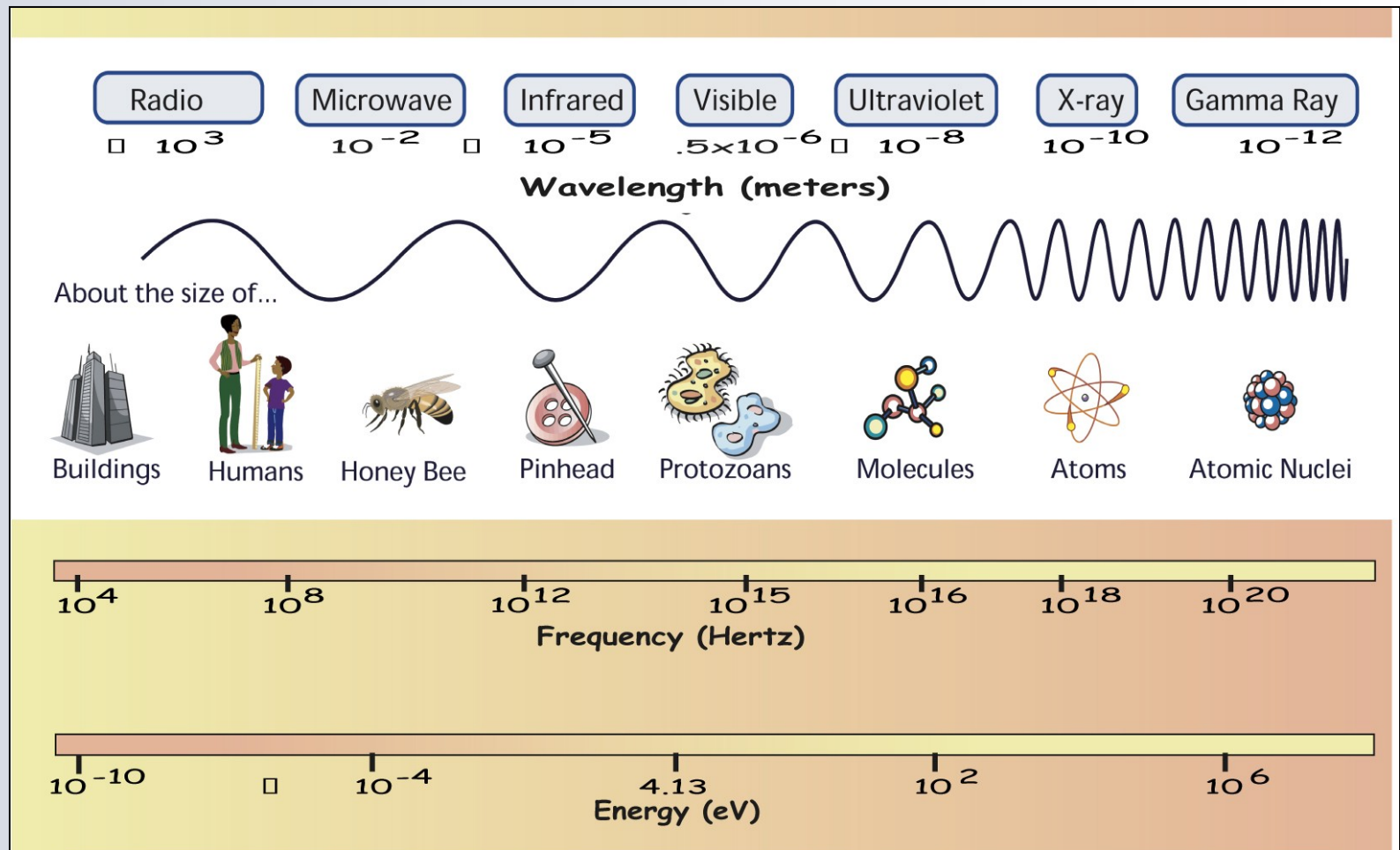
60 Garden Street
Cambridge, MA



Drs. Bill Forman and
Christine Jones



What are X-rays and Gamma rays?



Grad School at MIT (1977-1981)

Zonta Amelia
Earhart Fellow

1977, 1978, 1979



SAS-3
X-ray
Astronomy
satellite



Got married to Dr.
J. Garrett Jernigan,
Jr. on 6/1/1980

UCB Space Sciences Lab (1981 - 1986)

- Worked on Extreme Ultraviolet Explorer satellite project



UCB SSL



EUVE



Prof. C. Stuart
Bowyer

Space Shuttle Challenger 1/28/86

- EUVE launch delayed for many years
- Was offered SSU Associate Professor position
- “Cosmic Sign?”



Sonoma State University (1986 - present)

- Worked on Very Small Array radio telescope on roof of Darwin Hall
- Taught electronics, various physics & astronomy
- Many NASA research grants with undergrads
- Tenure in 1990
- Full professor in 1991



One VSA dish

Astronomy press (1996 -)

- High Energy Astrophysics Division -1st press officer (1996-2002)
- American Astronomical Society Deputy Press Officer (1997 - present)



Presiding over a press conference at AAS

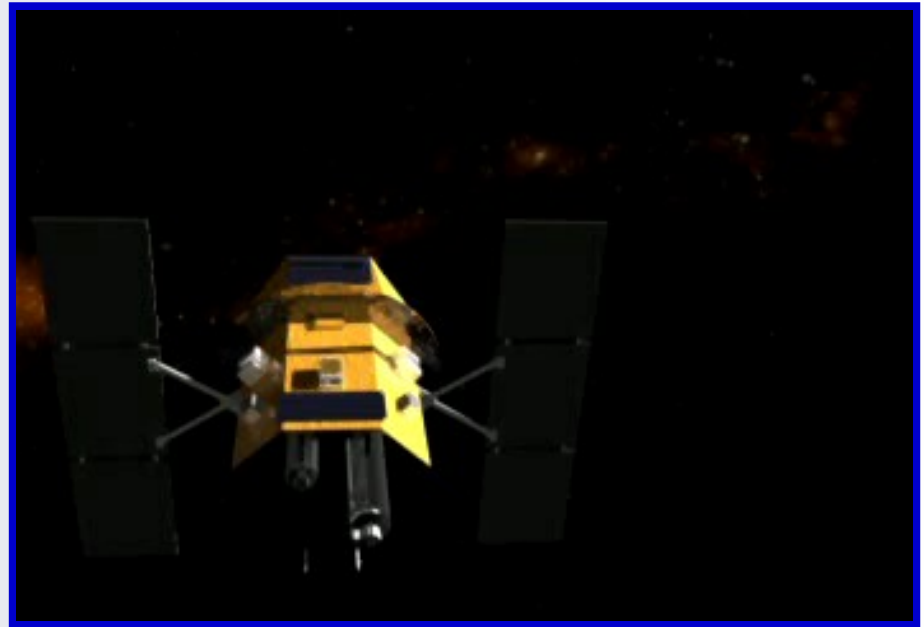
Education and Public Outreach at SSU (1999 -)

- >\$6 M in funding to date
- NASA High-energy missions
 - GLAST (to be launched in 2008)
 - Swift (launched 11/20/04)
 - XMM-Newton (12/10/99)
- North Bay Science Project
 - 2000-2005
 - Trained elementary teachers



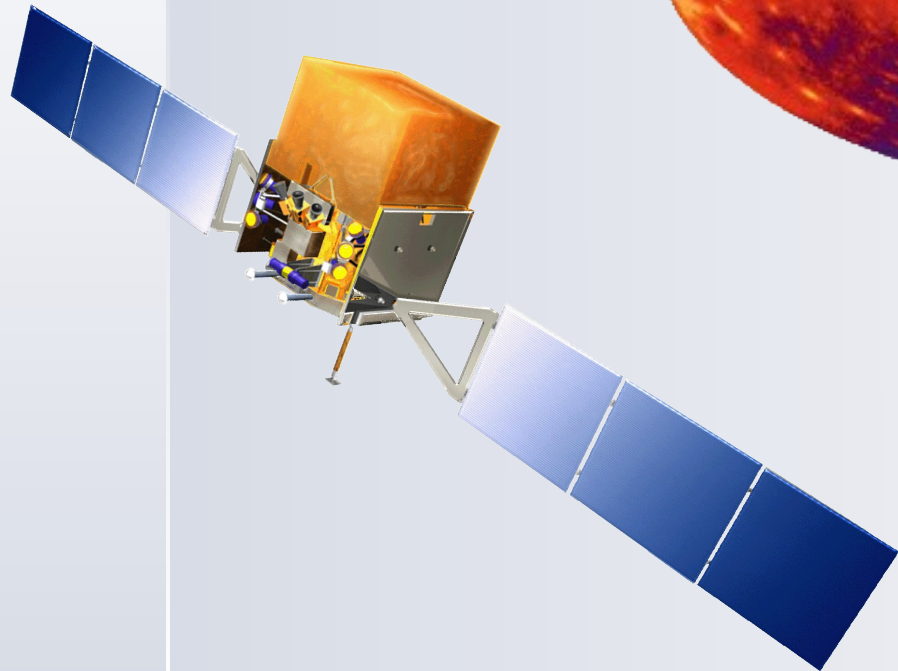
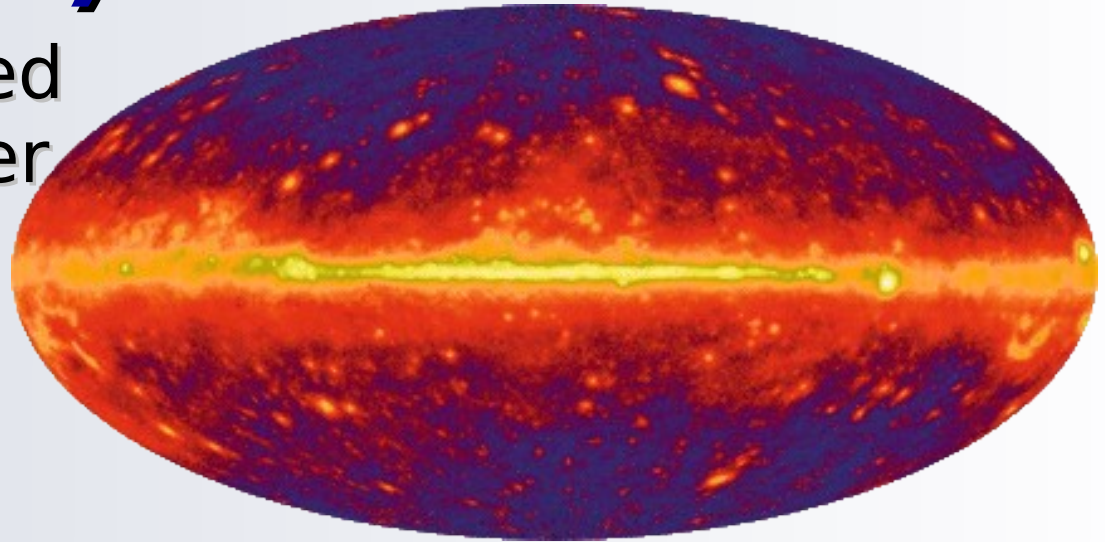
NASA's Swift Gamma-ray Burst Mission

- Studies Gamma-Ray Bursts with a “swift” response
- Launched 11/20/04



Gamma-ray Large Area Space Telescope (GLAST)

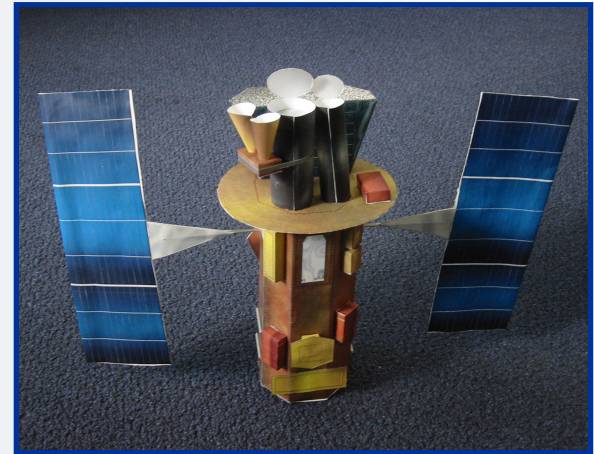
- To be launched
NET December
14, 2007



- Will study black holes, supernovae, gamma-ray bursts, neutron stars and more!

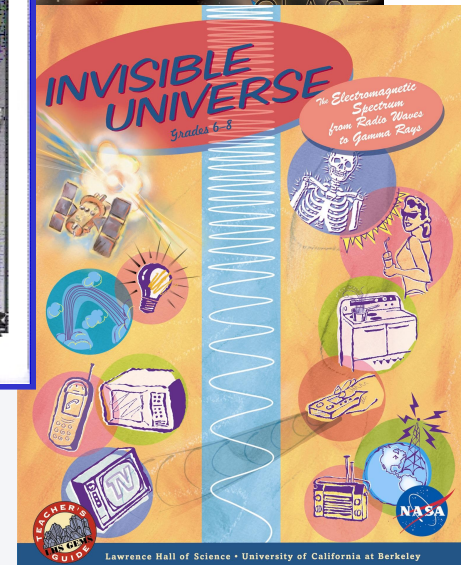
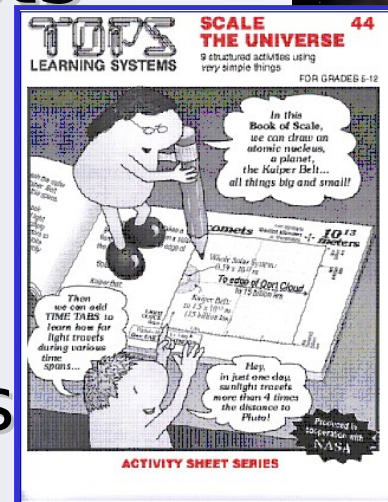
Explaining the High-energy Universe

- Formal education for grades 7-12
- Informal education through museums, planetaria, web-based activities
- Public Outreach through web, television, printed materials, games, etc.



Curriculum guides

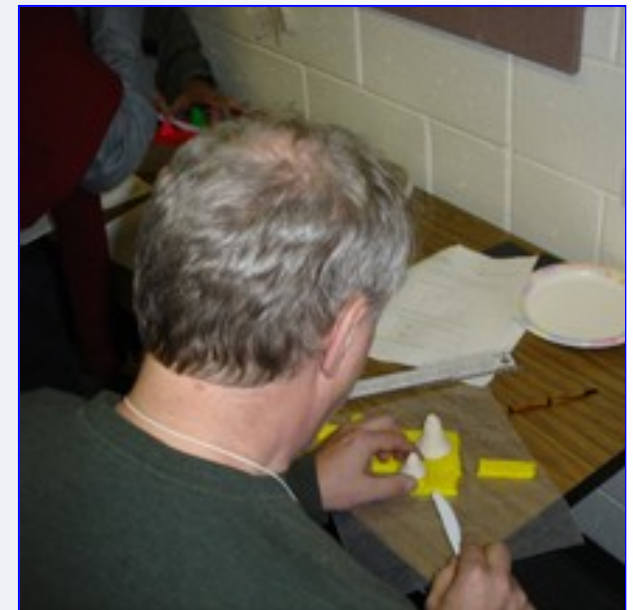
- Invisible Universe (GEM)
- Active Galaxies
- Gamma-ray Bursts
- Supernovae
- TOPS
 - Far Out Math
 - Scale the Universers
 - Pi in the Sky



Teacher Training

- Educator Ambassador workshops
 - Over 36,500 teachers trained in 5 years

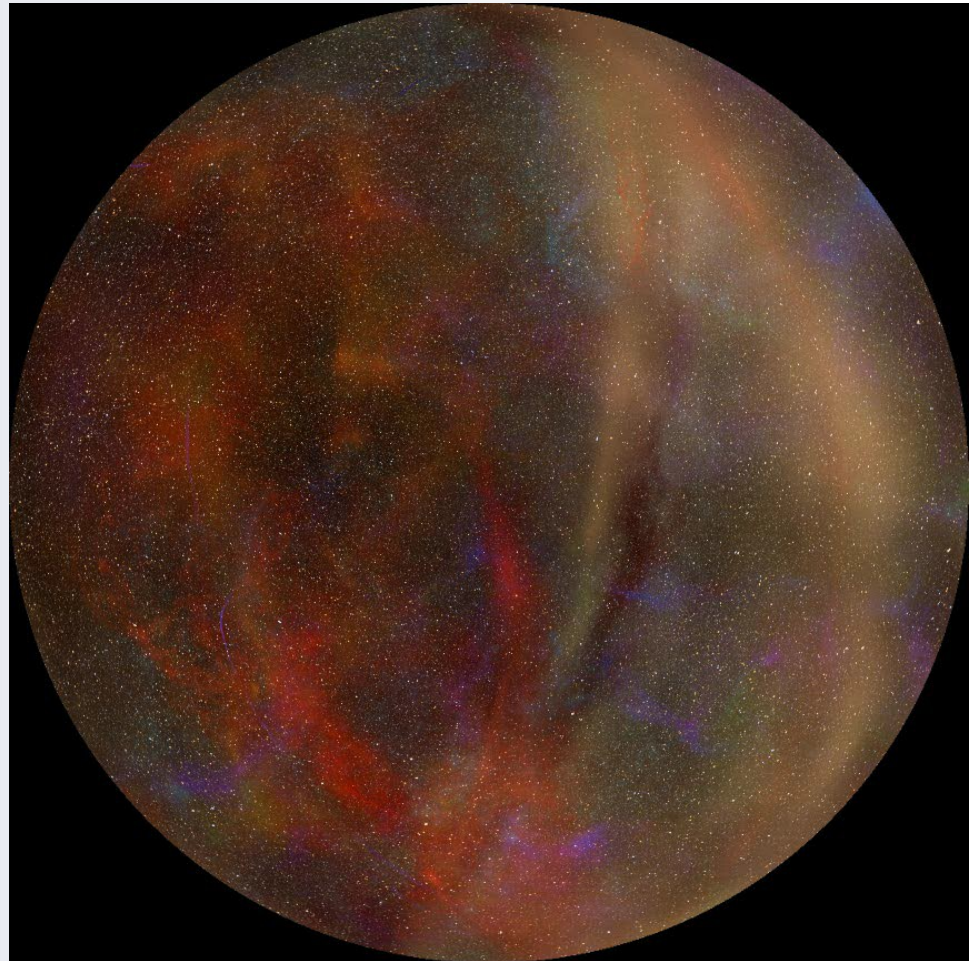
- Exhibit booth



Cookie cutter Astrophysics

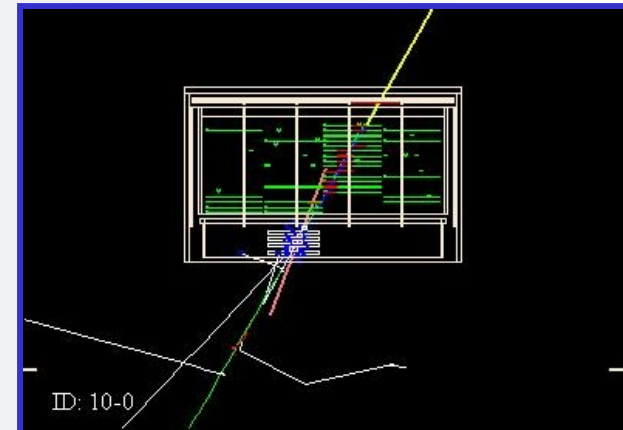
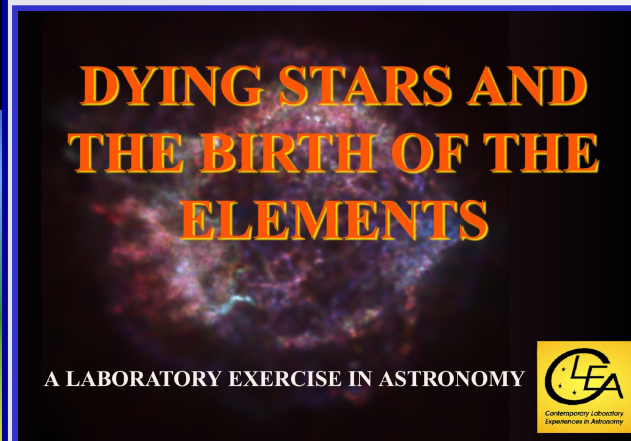
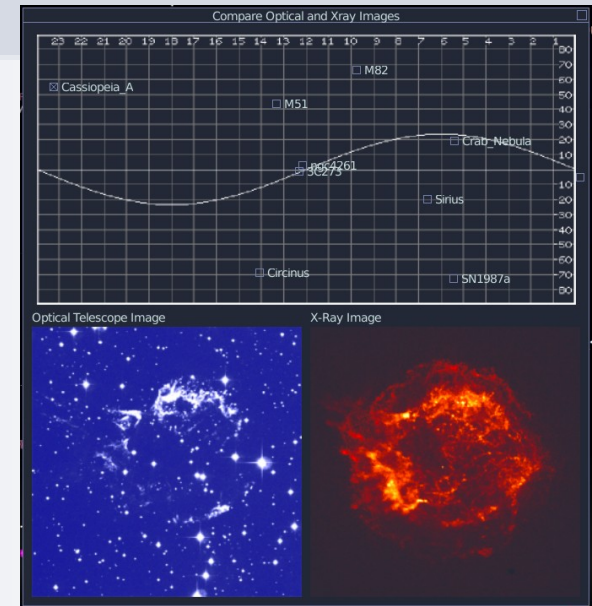
The Black Hole Project

- Planetarium show - Black Holes: The Other Side of Infinity
- PBS NOVA show: Monster of the Milky Way
- Directed by Tom Lucas



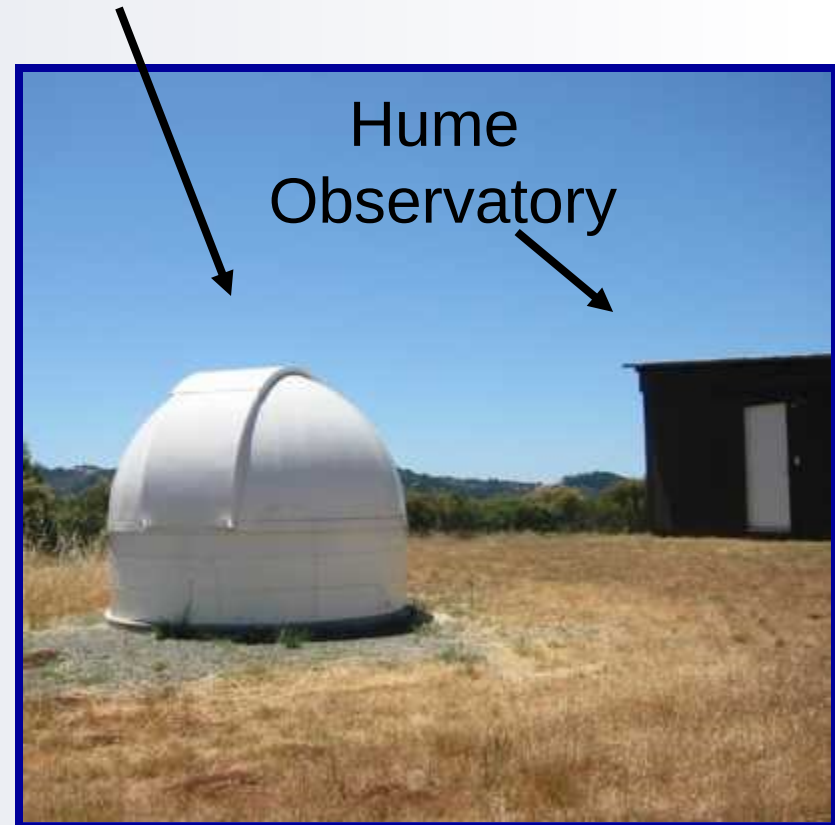
Computer activities

- Space Mysteries
- Dying Stars and the Birth of the Elements
- GLAST Large Area Telescope
- Portable Planetarium Show



GLAST Optical Robotic Telescope (GORT)

- Located at California Academy of Sciences' Pepperwood Natural Preserve
- Next door to Hume Observatory
- Partnership between SSU, NASA and Cal



And on a personal note....



Garrett on Blazar and Lynn on Mr. Ed at Lake Camanche 5/05



Oreo



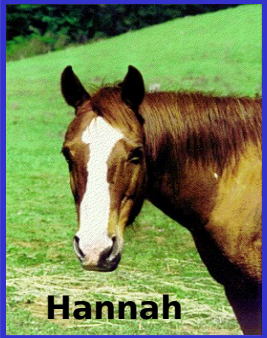
Gizzy



Nugget



Tracy



Hannah



Patche

S



Beau



Smoky

For more information:

- <http://epo.sonoma.edu>
- <http://glast.sonoma.edu>
- <http://swift.sonoma.edu>
- <http://mystery.sonoma.edu>

- <http://xmm.sonoma.edu>
- <http://glast.sonoma.edu/~lynnc>
- <http://www.glast.sonoma.edu/~lynnc/nova/blackh>

Thank you Zonta!!

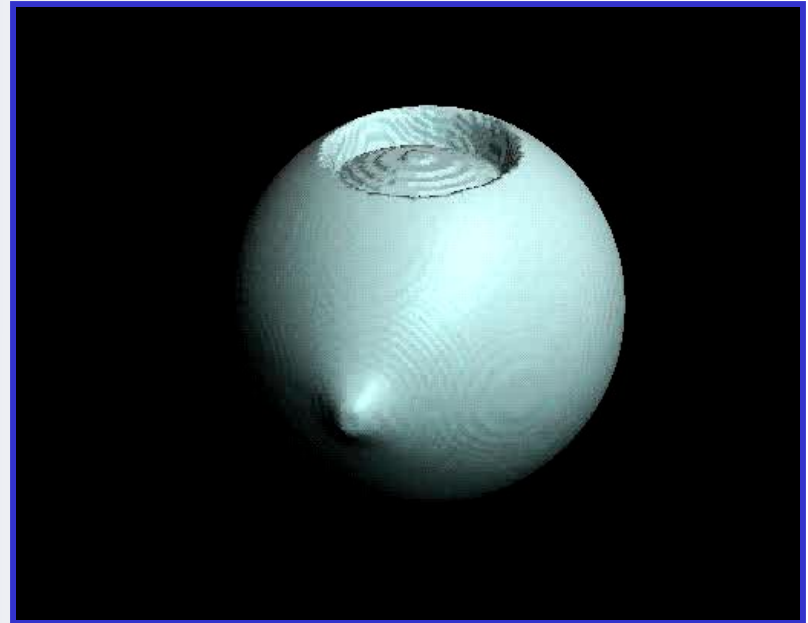


Photo Credit: Rory McNamara

Backups Follow

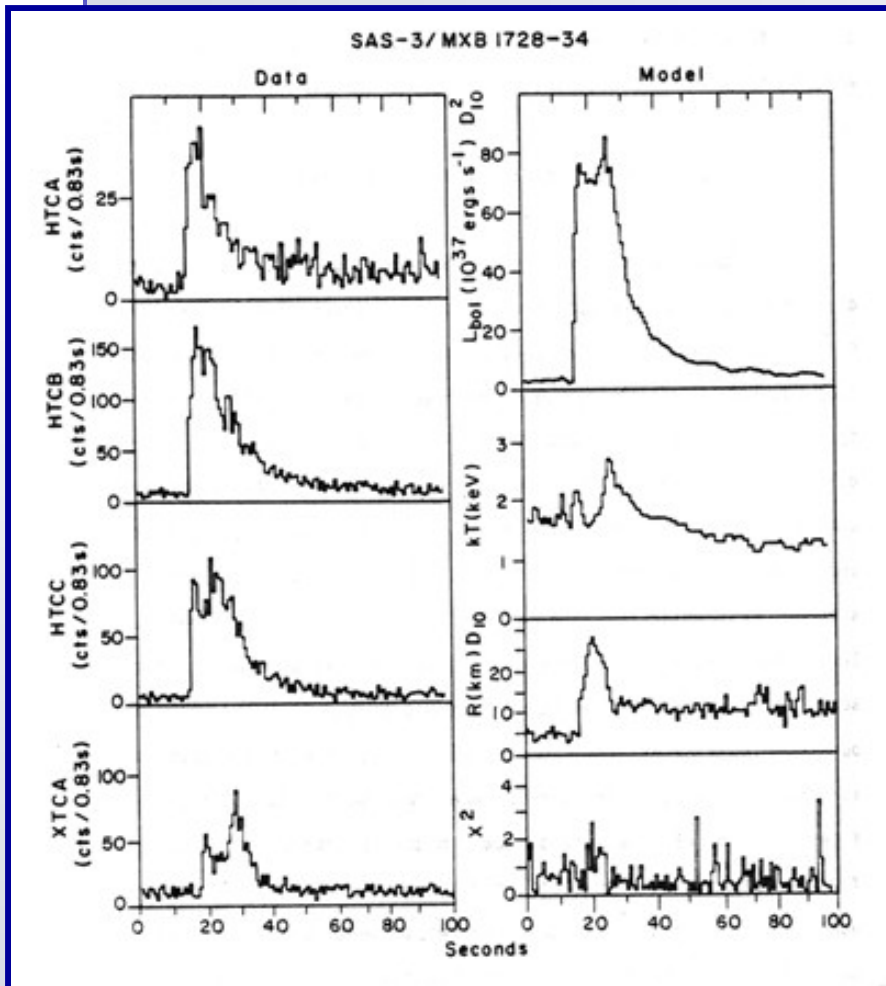
Black Holes & Neutron Stars in Binary Systems

- Binary systems with one “normal” star, and a dense, compact companion
- Gravity from compact star pulls matters from normal star
- Matter heats up as it falls in, making X-rays



3D Simulation by John
Blondin,

Ph.D. Thesis - X-ray Burst Sources



- Accreted matter piles up on surface of neutron star
- Bursts are due to thermo-nuclear explosions on the surfaces of neutron stars → H-bombs in