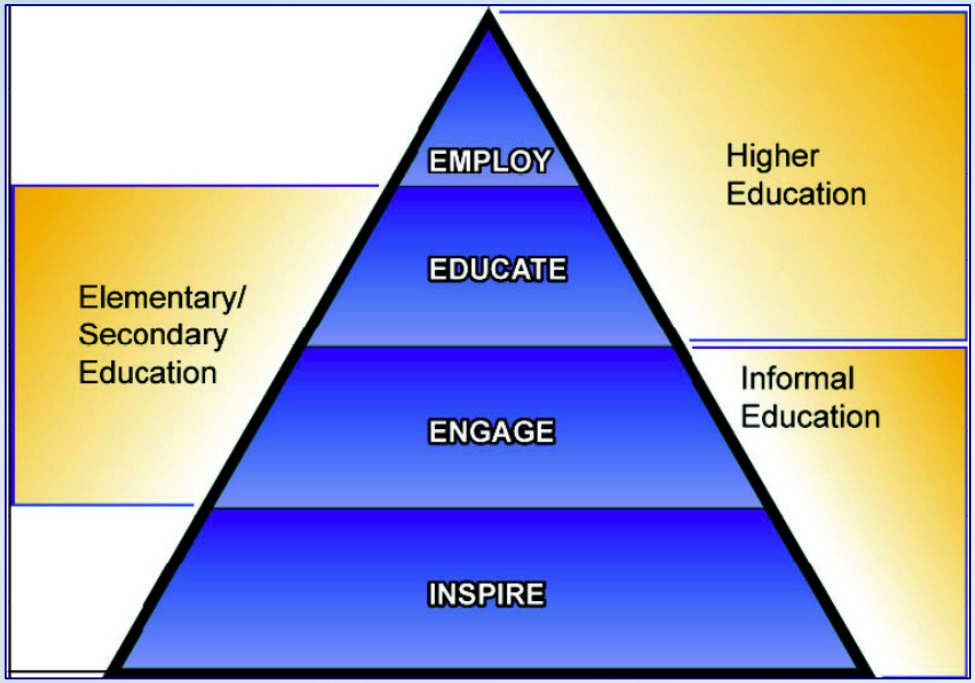
# Education and Public Outreach Program Update
# Fermi User's Group 10/29/10

Prof. Lynn Cominsky

Sonoma State University

# NASA Education Framework



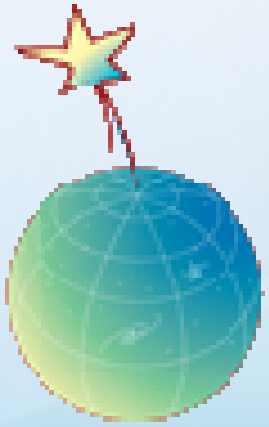

- Informal education and public outreach
- Elementary & Secondary education
- Higher Education

**Emphasis on workforce development for under-represented populations**

# Epo's Chronicles

- Continues weekly
- 2011 Calendars were made from IYA "eposodes" – will be distributed at AAS
- This year's special eposode theme is high-energy satellites, current and historical
- Alkina came to the USA Science and Engineering Festival

Alkina

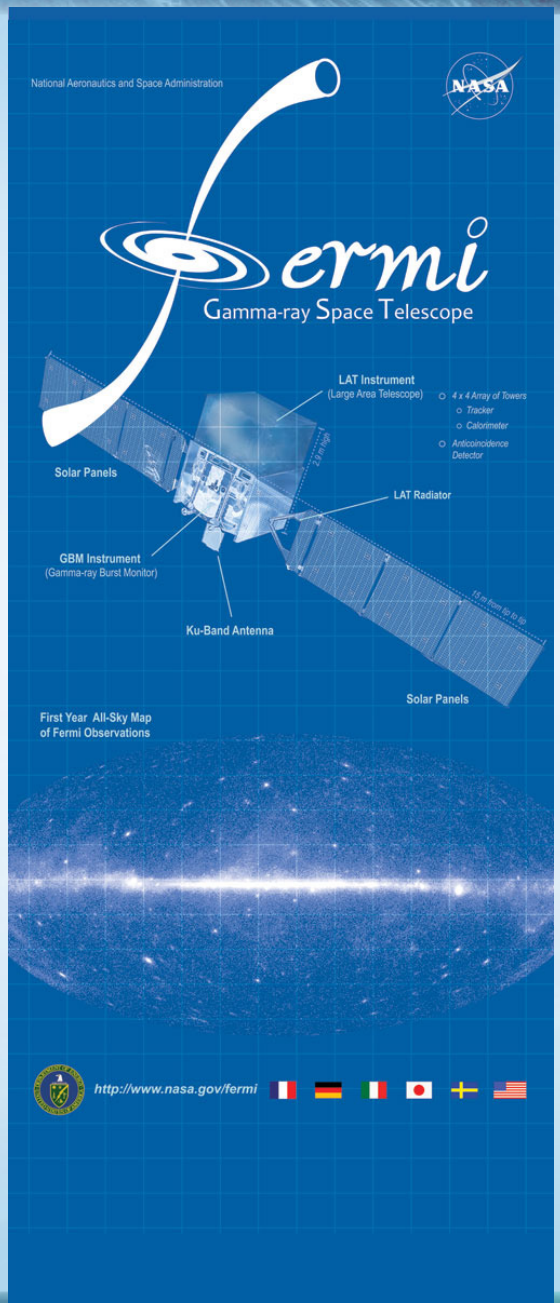


Epo

# Alkina and Administrator Bolden

# New Fermi Banner

- Designed by Aurore Simonnet for use at USA Science and Engineering Festival
- Will be used by Goddard for future events



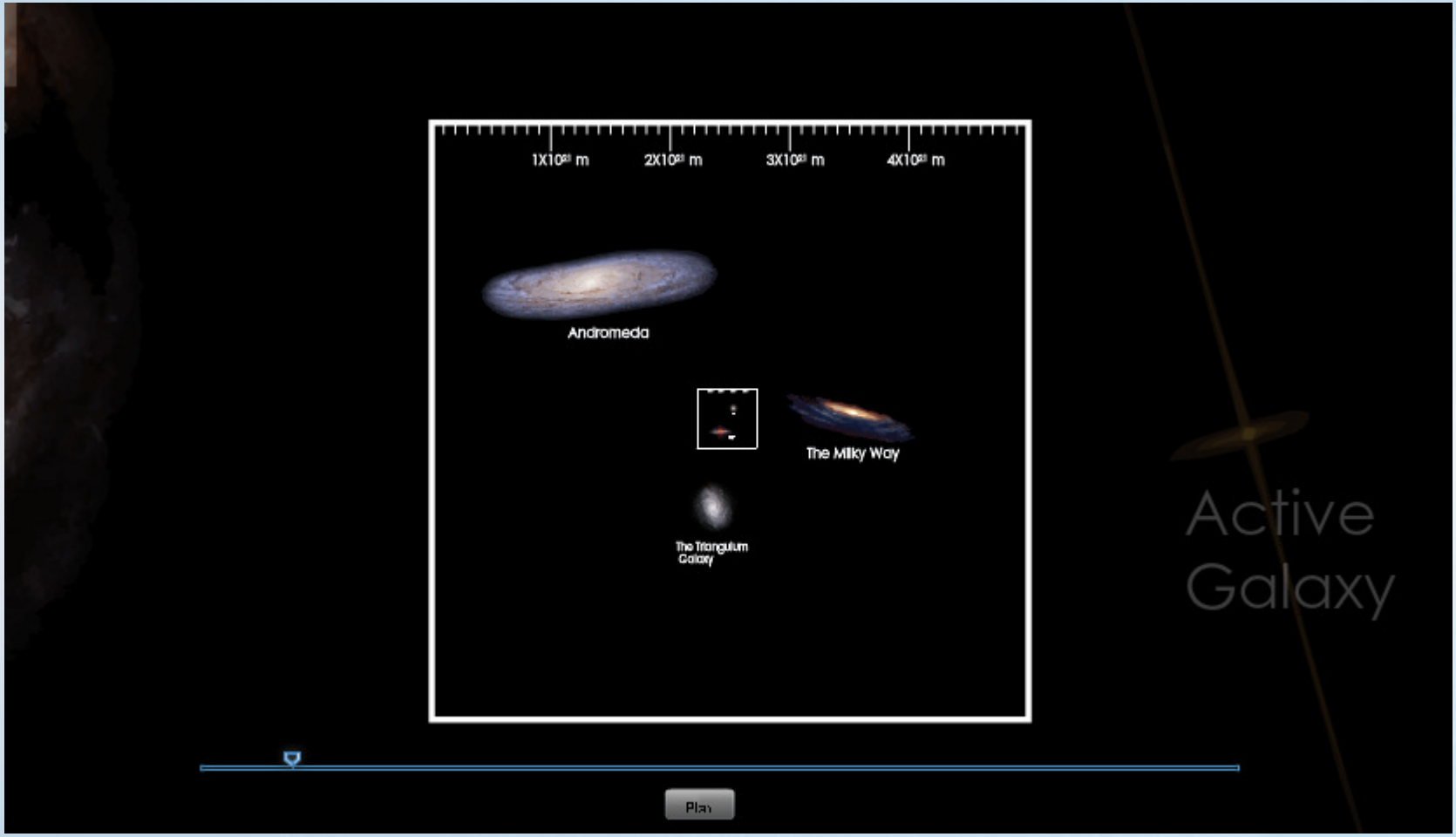
# Cosmology Course Development underway

- Module 1 testing (5 chapters) supposed to start in January
- Behind schedule due to RFP required by SSU Contracts & Procurement
- Two-phase RFP developed – first phase is due Nov. 1- we think 3 major publishers will be responding
- Second phase due mid-January. We should have a publisher (again) by February.

# Cosmology Course Development

- Chapter 1 complete and on website for use in RFP by publisher
- Chapter 2 nearing completion
- Chapter 3 drafted
- Many flash assets developed for chapters 1 and 2

# Flash: Scale of the Universe




http://epo.sonoma.edu/Cosmology/Flash

# Educator Ambassador Training at SSU

- July 26-30 – mini-course on particle physics
- Steve Ritz and Julie McEnery participated in training the teachers, along with Helen Quinn and others
- Physicist Author Ransom Stephens gave talk “Emmy Noether and the Fabric of Reality”
- All training materials are online. Edited videos of talks are in progress.
- http://epo.sonoma.edu/ea/training.php#

# Educator Ambassador Training at SSU

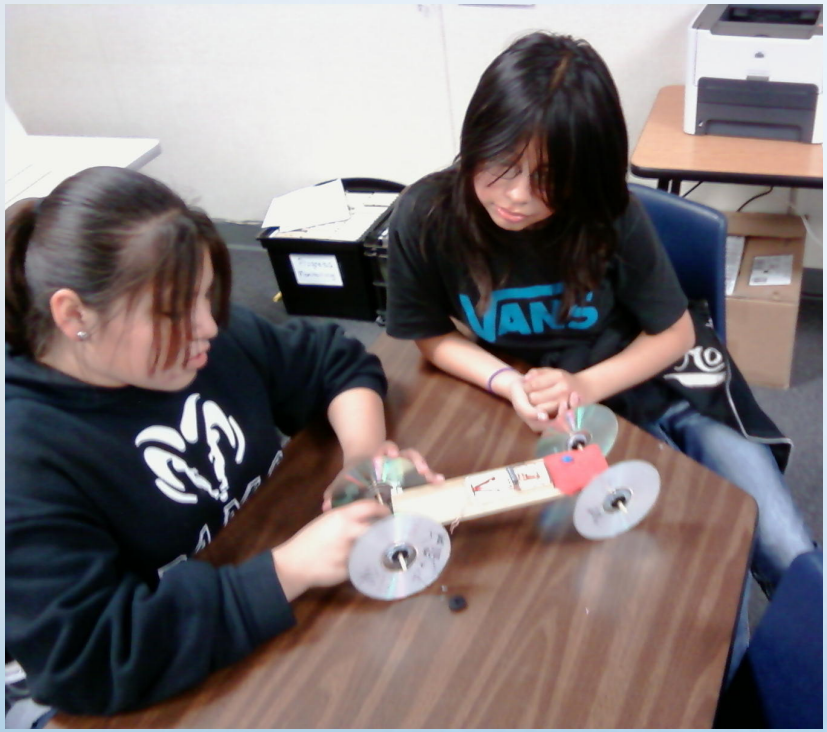
Stanford physicist Prof. Helen Quinn demonstrates how particle scattering can be used to learn about unseen objects.

Educator Ambassadors build Galileoscopes.

EAs look at images projected inside a home-made planetarium dome.

# After-school clubs

- SSU added a fourth after-school club this year at Roseland Accelerated Middle School, in partnership with MESA




RAMS students building mousetrap cars

# After-school clubs

- Roseland University Prep students at the MESA VEX robotics competition


RUP team won 1st place in oral presentations and 2nd place in robotic race event.

# 365 Days of Astronomy Podcast

- Audioplay for second podcast waiting for (former) Project Scientist input
- 365 days will continue in 2011


http://365daysofastronomy.org/

# Other SSU Workshops & Talks

- Fermi-content talks by Cominsky:
  - Healdsburg High School - 3/29/10
  - San Quentin Prison New Leaf program – 5/28/10
  - Hutchins School at SSU – 9/17/10
  - San Francisco Amateur Astronomers - 11/17/10
  - Oakmont Retirement Community – 12/7/10
- Presentations by Kevin McLin
  - “Global Telescope Network” – NCNAAPT 4/4/10
  - “Fermi and Galaxies” CSU Chico 11/16/10

# Conference Presentations in 2010

- "Probing Student Understanding of Cosmology," Kimberly A. Coble, G. Cochran, D. Larrieu, J. Bailey, R. Sanchez, L. Cominsky, & K. McLin, 2010AAS...21546614C
- "Using the Big Ideas in Cosmology to Teach College Students" K. Coble, J. Bailey, G. Cochran, V. Hayes, D. Larrieu, R. Sanchez, K. McLin and L. Cominsky, *Bulletin of the American Astronomical Society,*

  2010AAS...21641605C.
- "Using Telescopic Observations to Mentor High School Students in STEM" Astronomical Society of the Pacific E/PO conference Aug 1-4, 2010, McLin, K.

# Global Telescope Network 2/10

- New calibration pipeline now ready for testing by high school partners.
- Two (female) high school interns worked analyzing archival and new data on OS 319 and Mkn 501 and presented their data in a poster at the SSU summer science symposium.

# E/PO Summer Interns

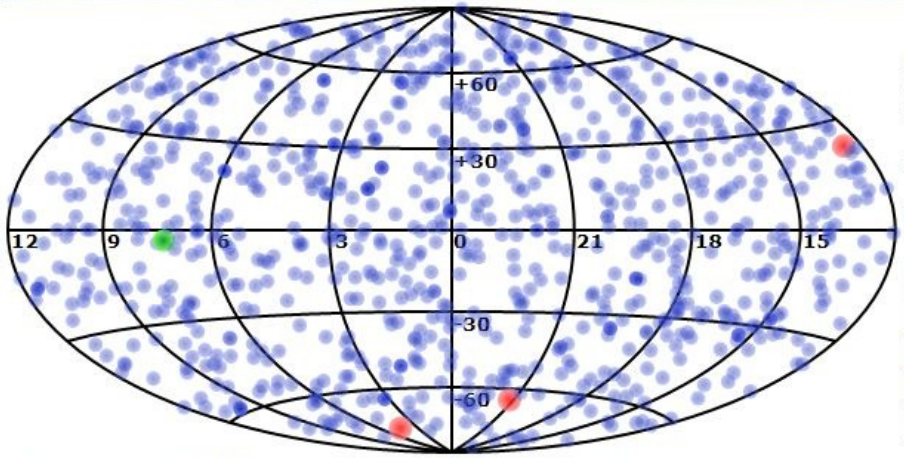
- Worked with Dr. Kevin McLin on GTN observations
- Kelsey Loupy and Kealeigh Reynolds, both from Healdsburg High School
- Presented their work with other SSU interns to their parents, faculty mentors and teachers in September.


# GRB Skymap Website

- Totally revamped in response to NASA Product review
- Now features all Fermi bursts as well as other missions like Swift
- XML file is available to anyone else who wishes to make their own GRB app

# GRB Skymap Website

GAMMA-RAY BURST — REAL-TIME SKY MAP




• Burst < 7 days old • Burst > 7 days old • Burst > 60 days old • Selected burst

**Burst ID:**
GRB 100511A
**Burst date:**
2010/05/11
**Burst time (UTC):**
11:50:39
**Detecting mission:**
Fermi

**Burst summary:**
The GBM showed several pulses in the burst light curve, which lasted 38 seconds. The spectrum was fit by a power law with exponential cutoff: index = -1.32 +/- 0.02, Epeak = 946.6 +134/-110 keV.

Click the GRB to learn more...

| Burst ID | Date | Time | Mission |
|---|---|---|---|
| GRB 100514A | 2010/05/14 | 18:53:58 | Swift |
| GRB 100513A | 2010/05/13 | 02:07:08 | Swift |
| GRB 100511A | 2010/05/11 | 11:50:39 | Fermi |
| GRB 100508A | 2010/05/08 | 09:20:42 | Swift |

Select Mission: All Bursts

About

Glossary
A | B | C | D | E | G | K | L
M | P | R | S | T | U | X | Z

GRB Raw Data

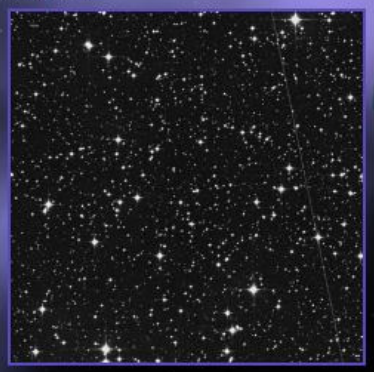
We are now making our GRB data available to the public as an XML file, which will allow custom applications (like the GRB Skymap on this page) to be built by anyone who wants. You can find the raw XML data file at http://grb.sonoma.edu/grbs.xml

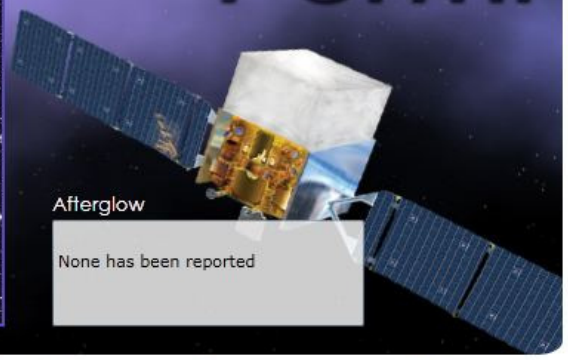
GRB ID: *GRB 100511A*
Galactic Coordinates
Longitude: *3.59°* Latitude: *220.02°*
Right Ascension: *07:17:12* Declination: *-04:39:00*
Constellation: *Monoceros*
Burst Details

The GBM showed several pulses in the burst light curve, which lasted 38 seconds. The spectrum was fit by a power law with exponential cutoff: index = -1.32 +/- 0.02, Epeak = 946.6 +134/-110 keV.

Print Preview

Star Field






Afterglow

None has been reported

Fermi HETE-2 Integral Konus-Wind SuperAgile Suzaku Swift

*Redshifts ending in "*p*" are pseudo-redshift.

Older, Flash version of the GRB site.

# Next E/PO Plans

- New litho set featuring first sky map and discoveries for each type of object – not yet
- *AER publications in progress: Cosmology Understanding, Educator Ambassador program, Black Hole show audience learning*
- *New Fermi poster in progress – skymap is central image, accompanied by callouts for major discoveries – input welcomed!*
- *E/PO plan for 2011-2013 (or more?) needs rework and resubmittal to HQ.*

# PR Update

Press releases and web features since last FUG (2/10):

- 11/3/10: News about GRBs – GRB 2010 press conference reports observational evidence for magnetars in GRB-systems, and studies of hyperenergetic GRB events
- 8/12/10: Fermi Detects 'Shocking' Surprise from Supernova's Little Cousin
- 4/1/10: Fermi Maps an Active Galaxy's 'Smokestack Plumes'
- 3/2/10: (HEAD press conference) NASA's Fermi Probes "Dragons" of the Gamma-ray Sky

# Future PR projects

- Gamma-ray bubbles – NASA media telecon scheduled for next week 11/9/10
- Crab nebula flares – NASA press release in progress, awaiting paper acceptance
- Terrestrial gamma flashes – TBD awaiting scientific paper acceptance
- Getting new contract in place – current four-year contract expires in Jan. 2011.