NASA/DOE Joint Programs

Astronomy and Astrophysics Advisory Committee

Dr. Jon Morse
Astrophysics Division Director
Science Mission Directorate
NASA Headquarters

February 18, 2009

Joint Dark Energy Mission

2005-07 Mission Concept Studies - 3 selected

2005 Dark Energy Task Force (theory group)

2007 BEPAC Recommendation - JDEM Highest Priority of Einstein Probes - search for partners

2007-08 RFI + TMC reviews of Mission Concept Studies

2007 Fall Joint planning initiated with DOE, under guidance of OSTP

2008 Figure-of-Merit Science Working Group (theory)

2008 NASA & DOE Project Offices established

2008 Nov JDEM MoU signed by NASA/DOE

2008-09 Science Coordination Group – Develop Science Requirements - Reference Mission developed by agencies

2008 Pre-A.O. Announcement Oct 15

2008 NASA/ESA Bilateral meetings July 08, Jan 09

2009 Studies initiated to combine JDEM and Euclid into one mission

2009 Draft AO planned for Feb/Mar

Optimization of International Resources for Dark Energy Research

- The potential merger of Euclid and JDEM into a single mission brings the limited resources of 2 M-class missions to a common Dark Energy Mission.
- The science goals of JDEM and Euclid are the same - the measurement of cosmological parameters via visible/near-infrared imaging and spectroscopic surveys.
- The Reference Mission designs for JDEM and Euclid have a large degree of overlap.
- Prior to the discussions of combining JDEM and Euclid, the science communities in the U.S. and Europe were concerned that the funding allocated for these 2 overlapping missions was inadequate. The combined mission saves each agency considerable cost and enables them to do full space-based DE science as well as other programs.
- The optimization of roles for NASA, ESA, and DOE is under review.

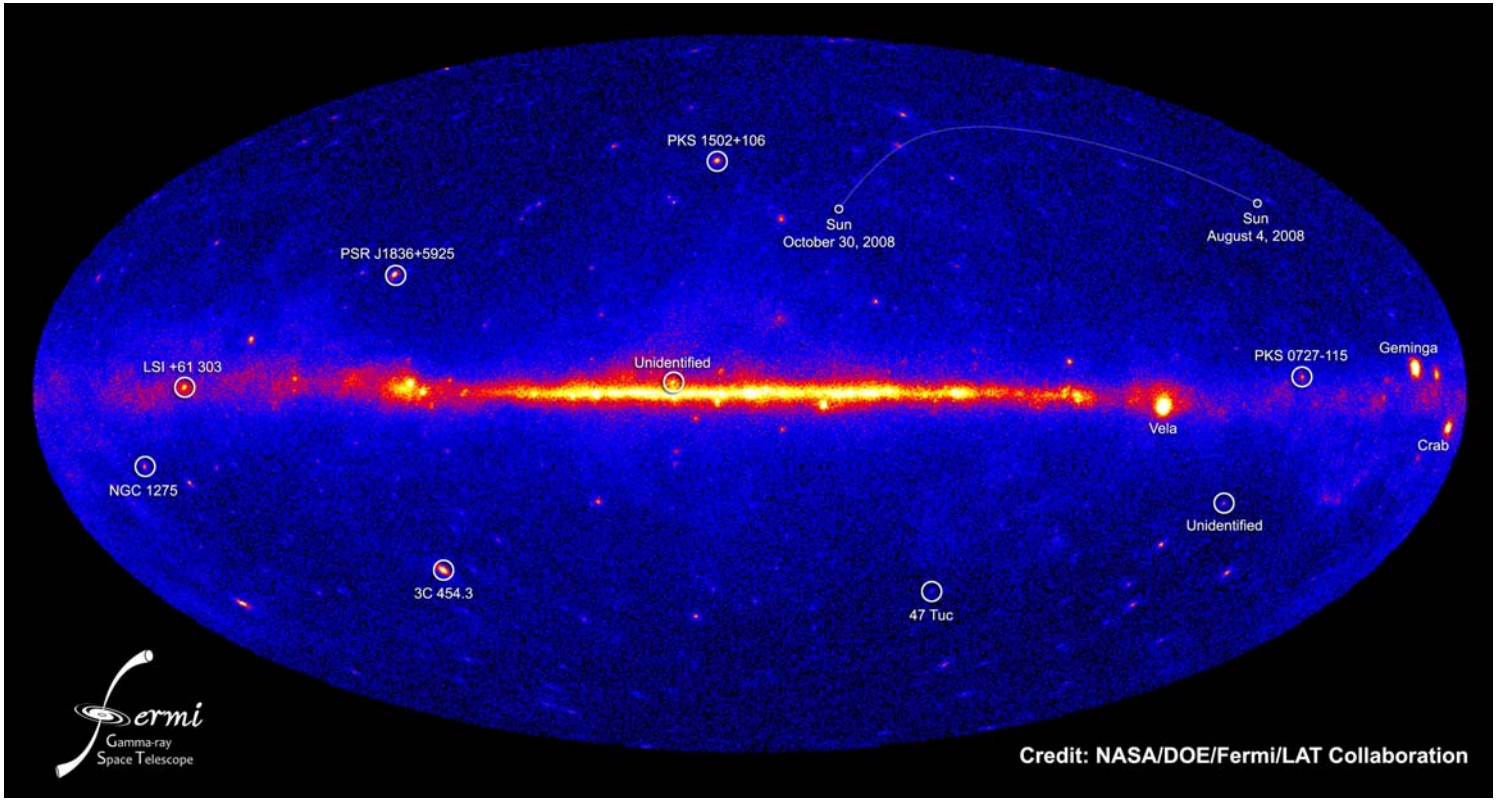
Fermi Gamma-ray Space Telescope

- Fermi collaboration includes: 6 countries, 22 institutions, and 400+ members.
- DOE and NASA collaboration on Large Area Telescope (LAT).
- 2 instruments: LAT (20 Mev to 300 Gev) & GBM (8 keV to 30 MeV)
- 20% of the sky at any instant and all parts of sky in 30 minutes every 3 hours in survey mode.

Both instruments are performing flawlessly!

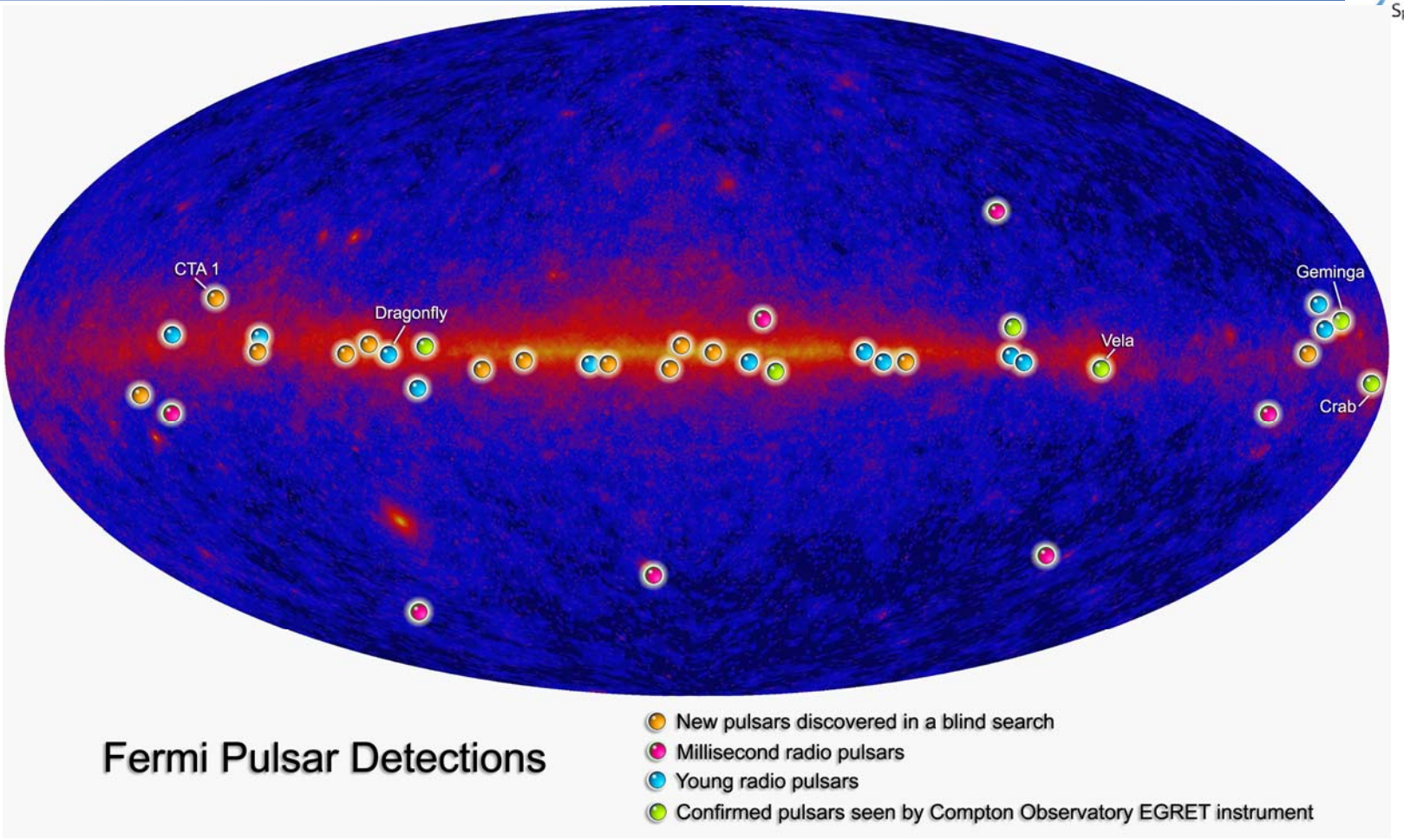
Launch June 11, 2008 from Cap Canaveral.

Fermi Telescope Reveals
Best-ever View of the Gamma-ray Sky



- 100+ talks given since first light.
- 20+ papers in preparation for the LAT team, 3 for the GBM team
- 12 papers submitted by the Fermi team (more submitted by external investigators bases on the public data releases)
- 2 papers published
- 4 press releases (+ 1 coming out this week)

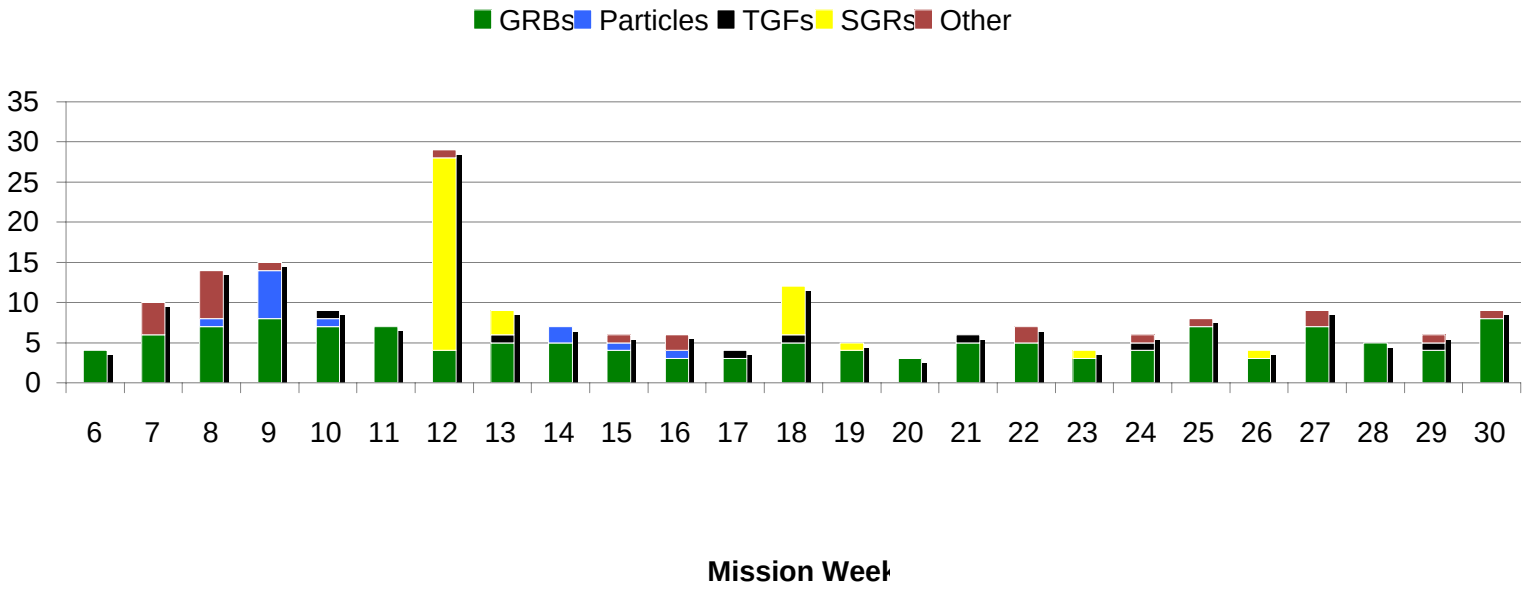
Fermi Pulsar Detections



Over 3 dozen pulsars detected (7 millisecond Gamma-ray pulsars; 13 young gamma-ray only pulsars; 12 new young radio pulsars; 6 confirmed known EGRET pulsars).

- 12 new pulsars found directly in the gamma-rays (blind searches) and
- 18 additional pulsars seen for the first time as gamma-ray emitters.

Fermi Triggers



The Gamma-ray Burst Monitor has detected:

- 153 Gamma-ray Bursts
- 2 Soft Gamma-ray Repeaters
- 1 Anomalous X-ray Pulsar
- 8 Terrestrial Gamma-ray Flashes.