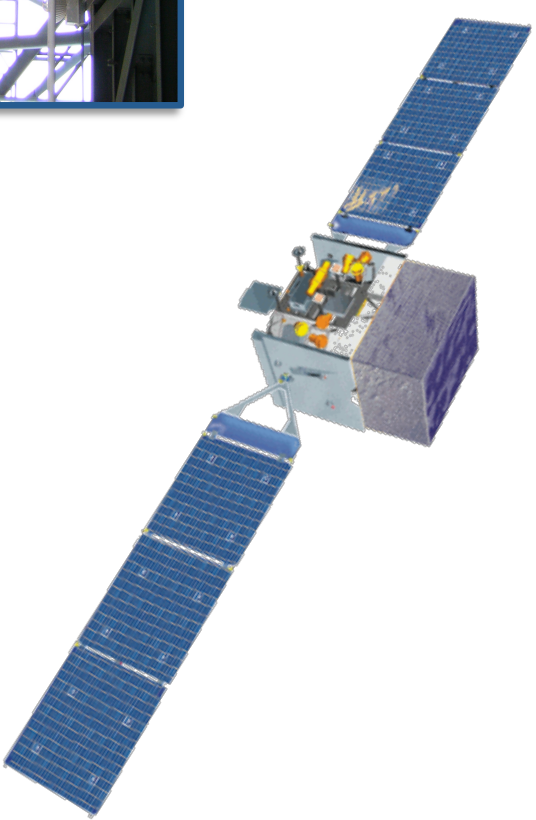


# Neil and Fermi



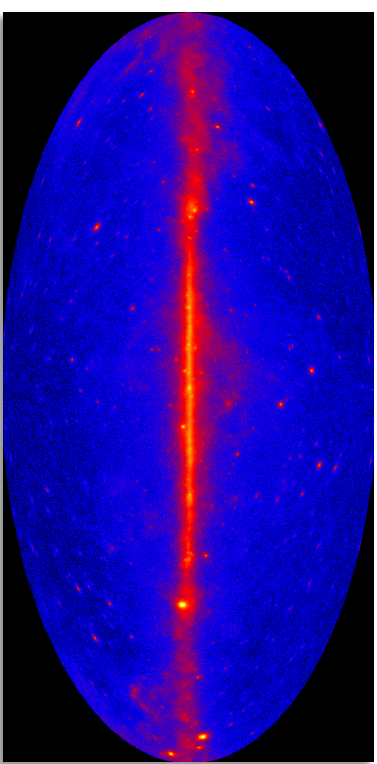
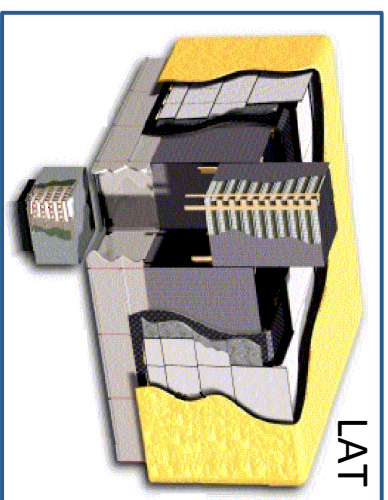
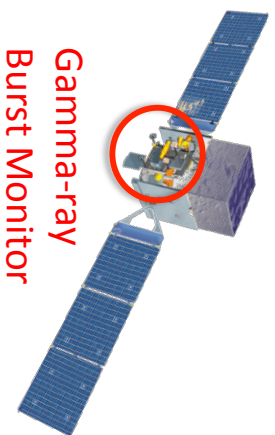
Liz Hays

NASA GSFC

# A Broad Observatory with Broad Science

From the Gamma-Ray Astronomy Program Working Group that Neil co-chaired:

**Top recommendation: A next-generation high-energy gamma-ray mission. Such a 10 MeV to 100 GeV mission would follow on the successes of EGRET and address the questions of the nature of jets and AGN, the origin of the diffuse high-energy gamma-ray background, the origin of cosmic rays, the high-energy emission from gamma-ray bursts, the nature of the unidentified high-energy sources.**



# Fermi LAT as a Sky Monitor



Instantaneously  
views 20% of the  
sky.

Rapid detection and  
alert generation  
onboard for bursts.

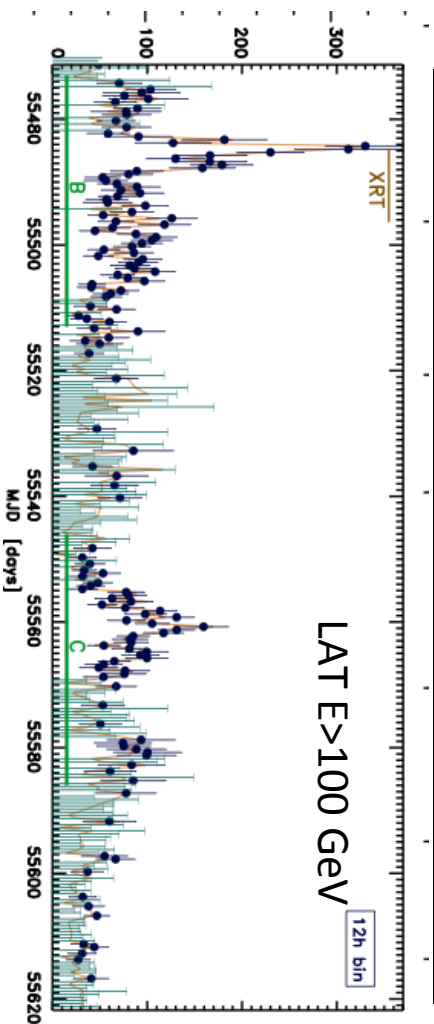
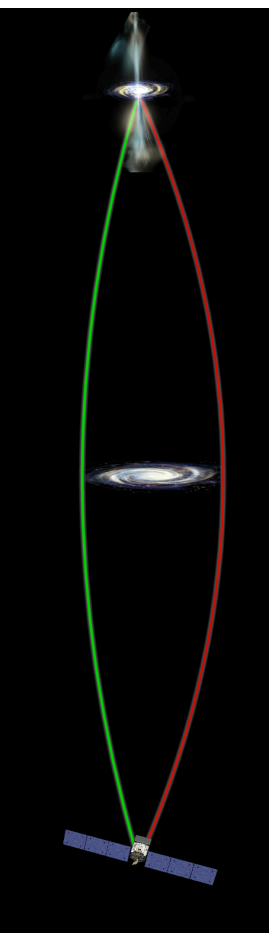
Automated on-  
ground alerts for  
flare activity.

00000 seconds

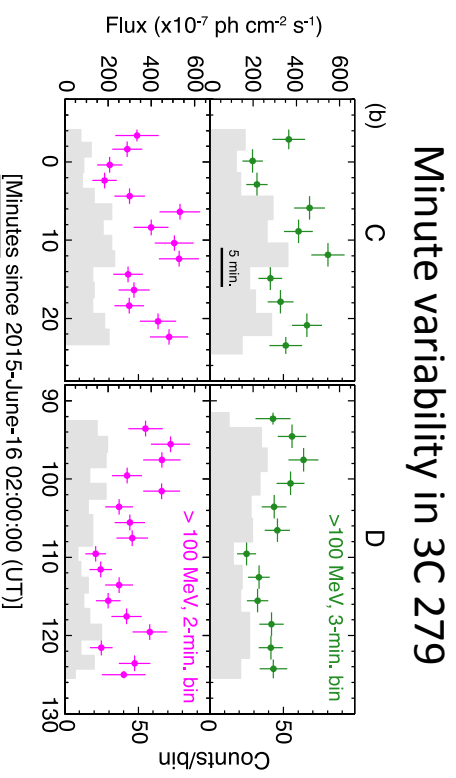
Exposure accumulating over 2 orbits of sky survey

# Blazar Variability

PKS 1830-211, a gravitationally lensed blazar



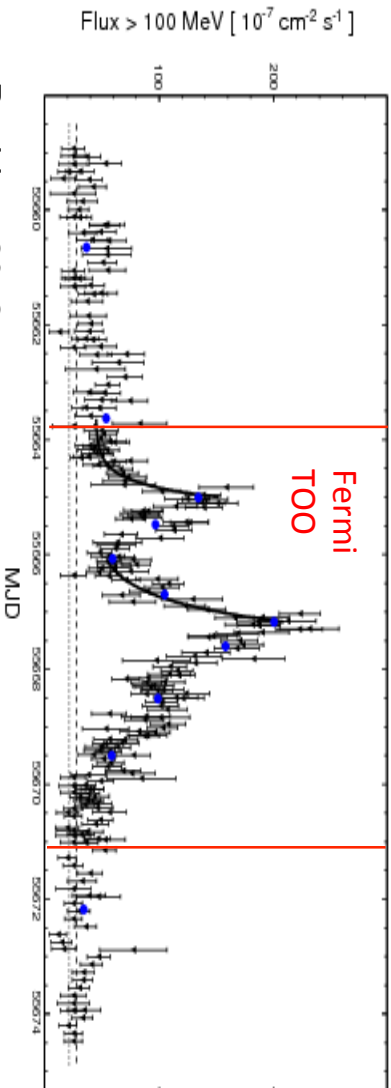
Abdo+ 2014



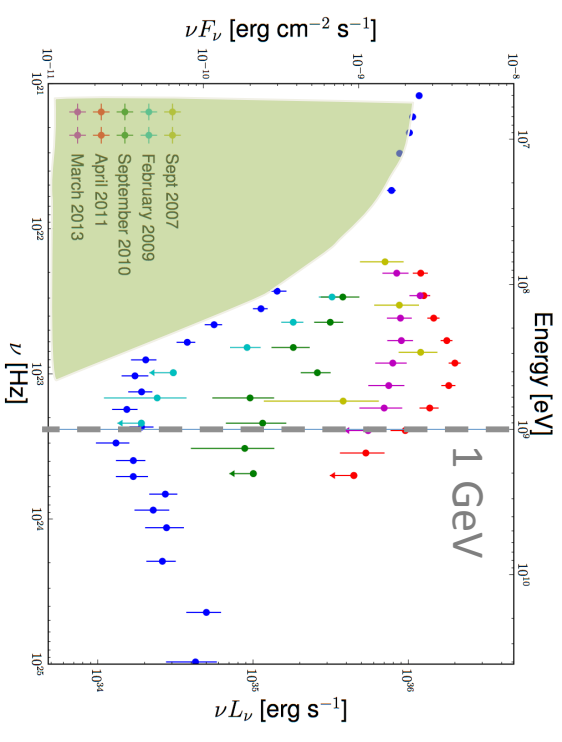
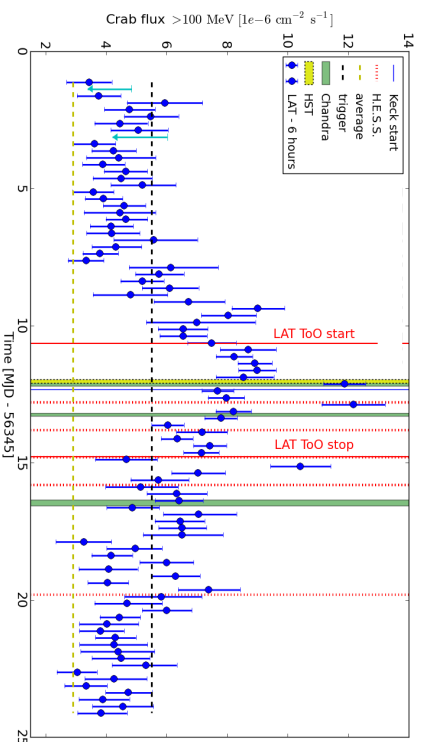
Ackermann+ 2016



# Crab Nebula Flares



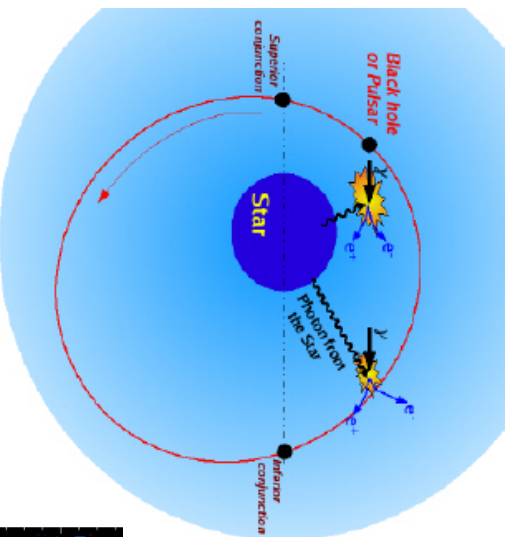
Buehler+ 2012



Mayer+ 2013

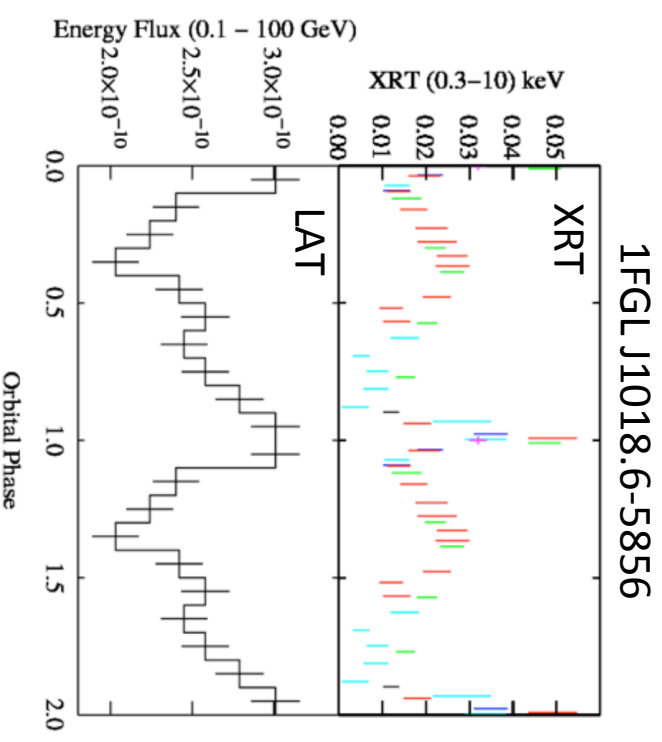
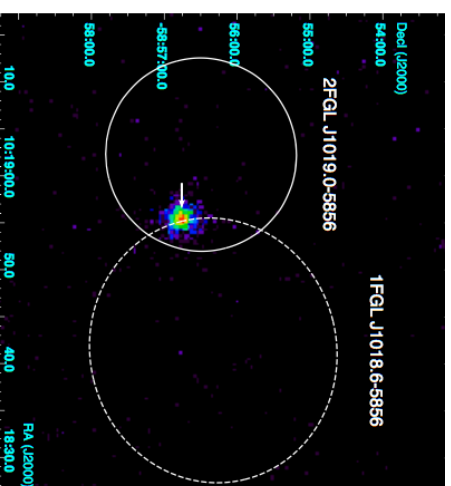
Buehler 2014

# Gamma-ray Binary Discovery



16.6 day orbital  
period found in  
gamma-ray data

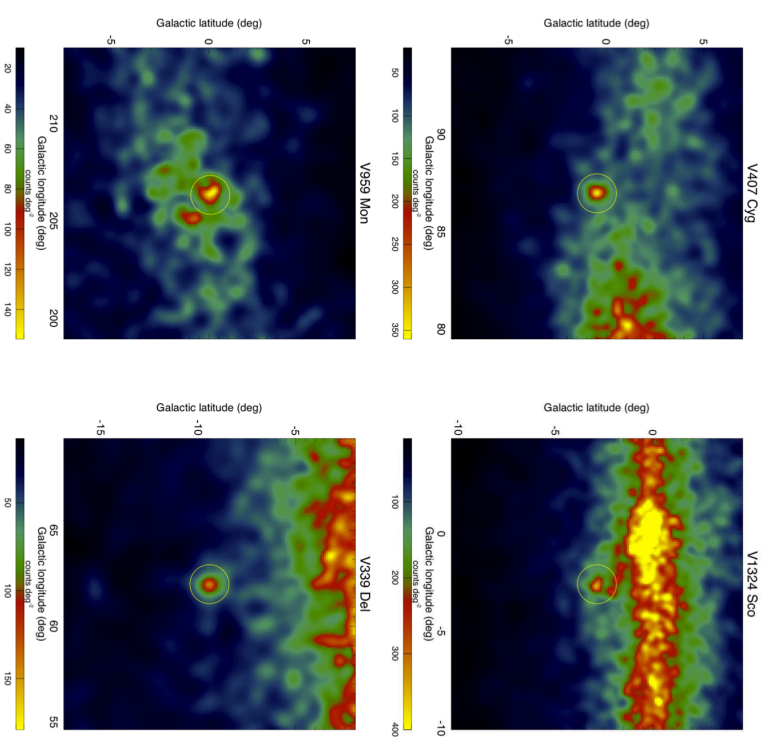
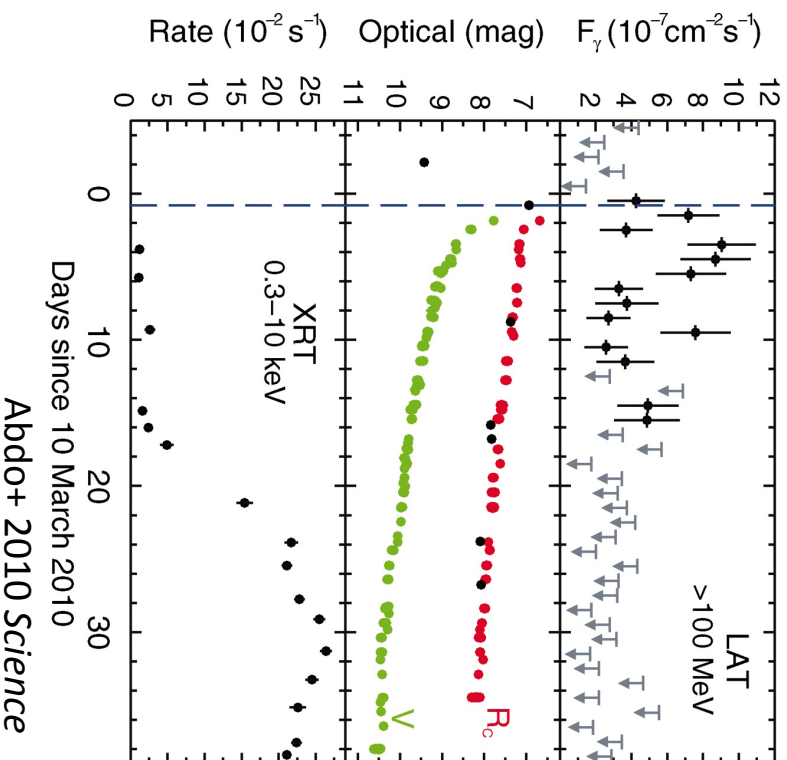
XRT



Ackermann+ 2012 *Science*



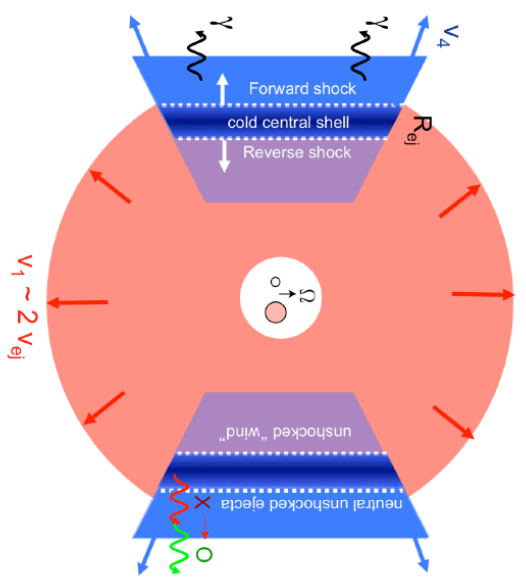
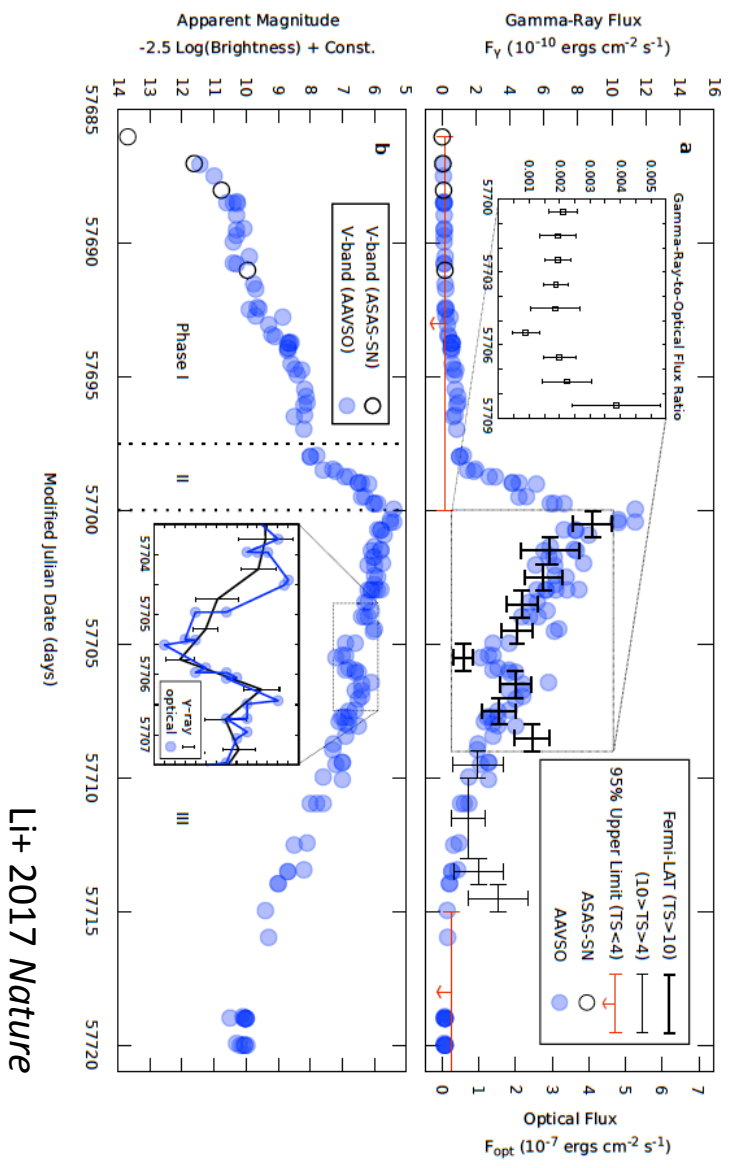
# Gamma-ray Novae



Ackermann+ 2014 Science

# Shocking Developments

ASASSN-16ma



Metzger+ 2015

Li+ 2017 Nature

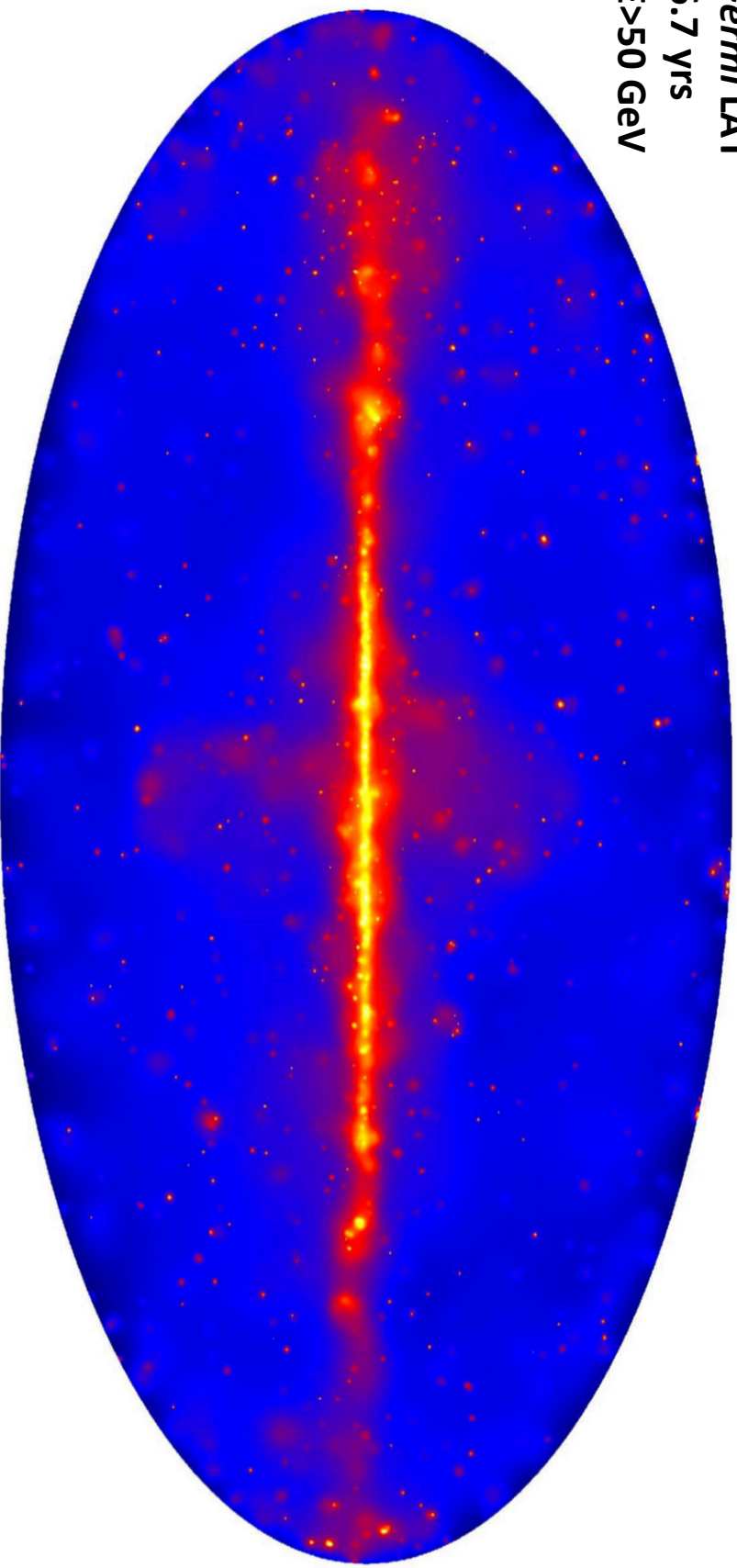


# Resolving Gamma-ray Sources

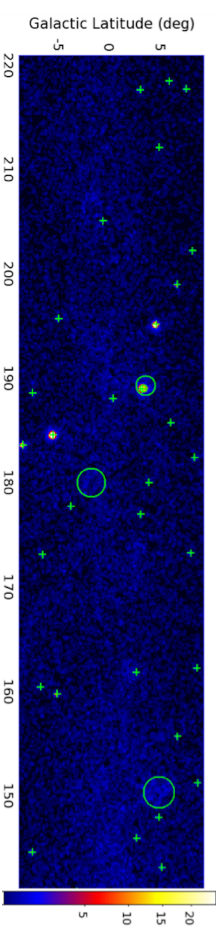
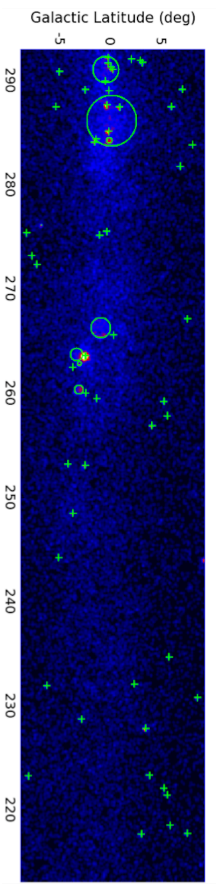
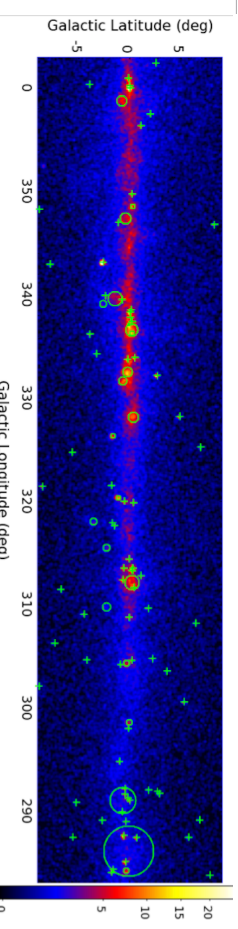
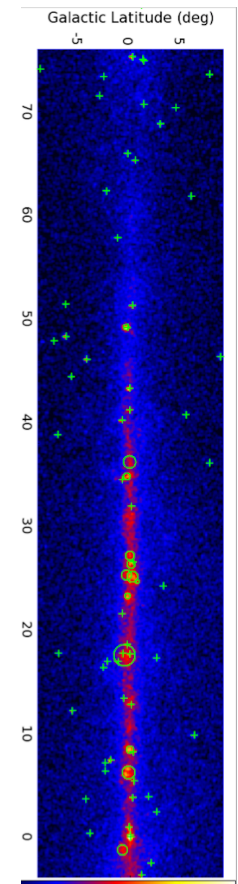
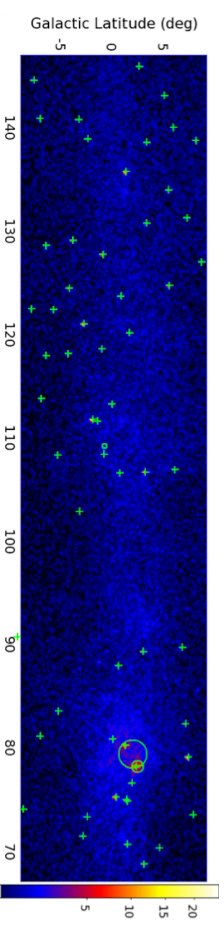
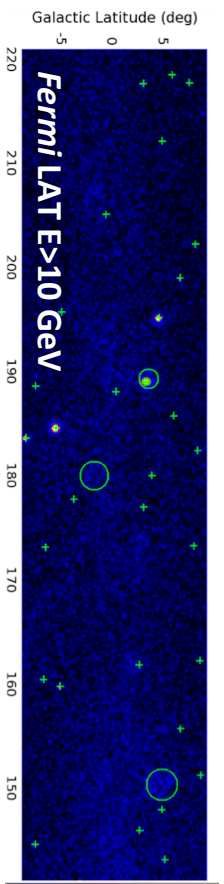
*Fermi* LAT

6.7 yrs

$E > 50$  GeV



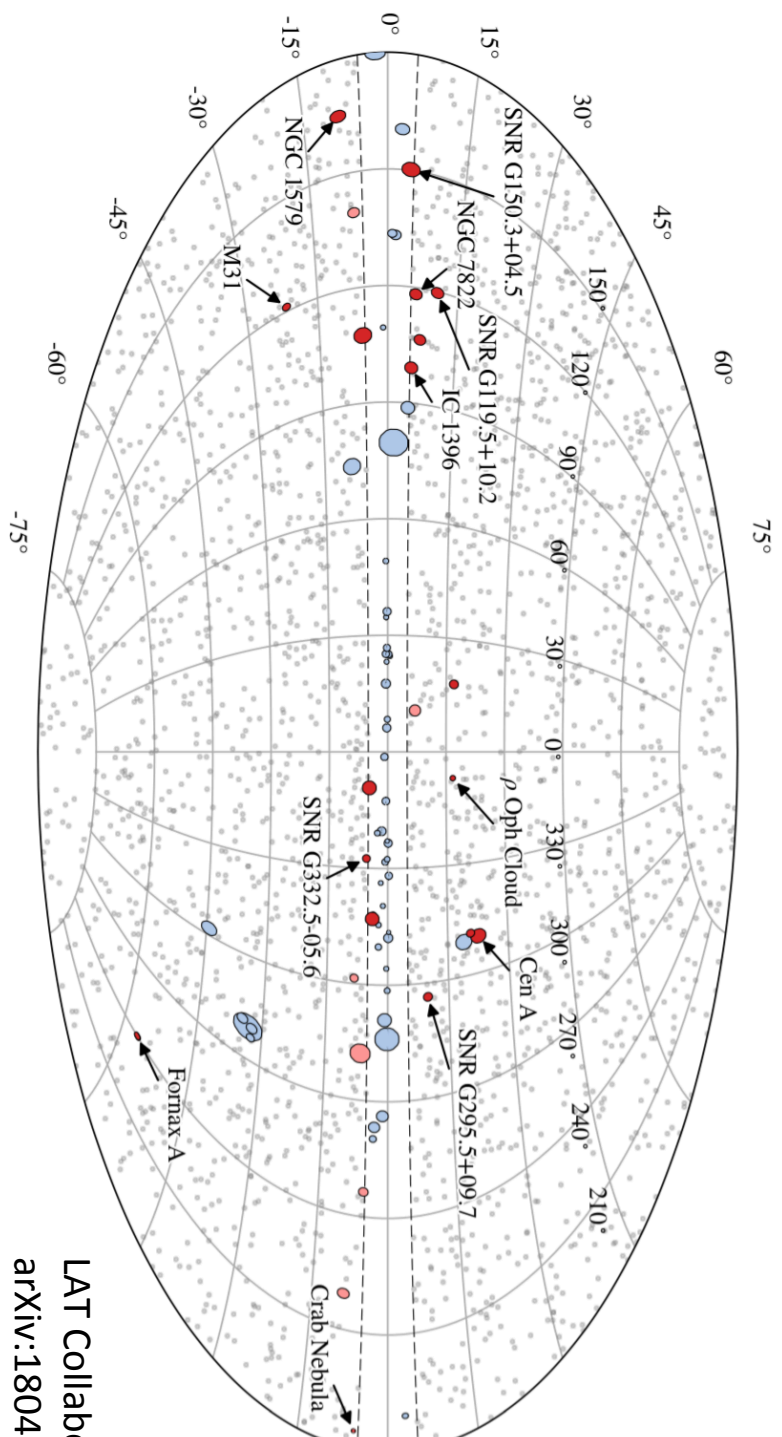
# High-Energy Galactic Sources



*Emphasis on spatially extended sources*

Ackermann+ 2017

# High-Latitude Search for Spatial Extension



LAT Collaboration  
arXiv:1804.08035

# Mentorship and Community



Science is for everyone!

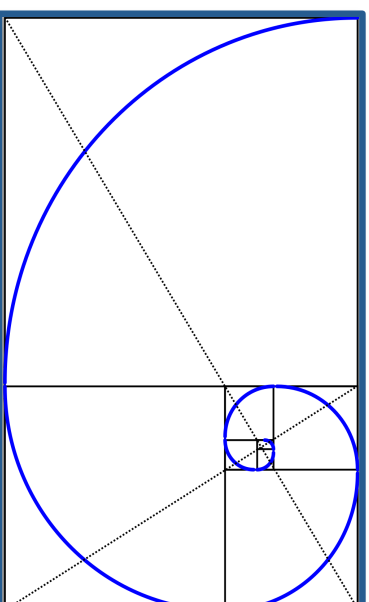


# bal·ance

/ˈbæləns/ 

*noun*

1. an even distribution of weight enabling someone or something to remain upright and steady.  
"slipping in the mud but **keeping their balance**"  
*synonyms*: **stability, equilibrium, steadiness, footing**  
"I tripped and lost my **balance**"
2. a condition in which different elements are equal or in the correct proportions.  
"overseas investments can add balance to an investment portfolio"  
*synonyms*: **fairness, justice, impartiality, evenhandedness, egalitarianism, equal opportunity**; **More**



Thank you, Neil