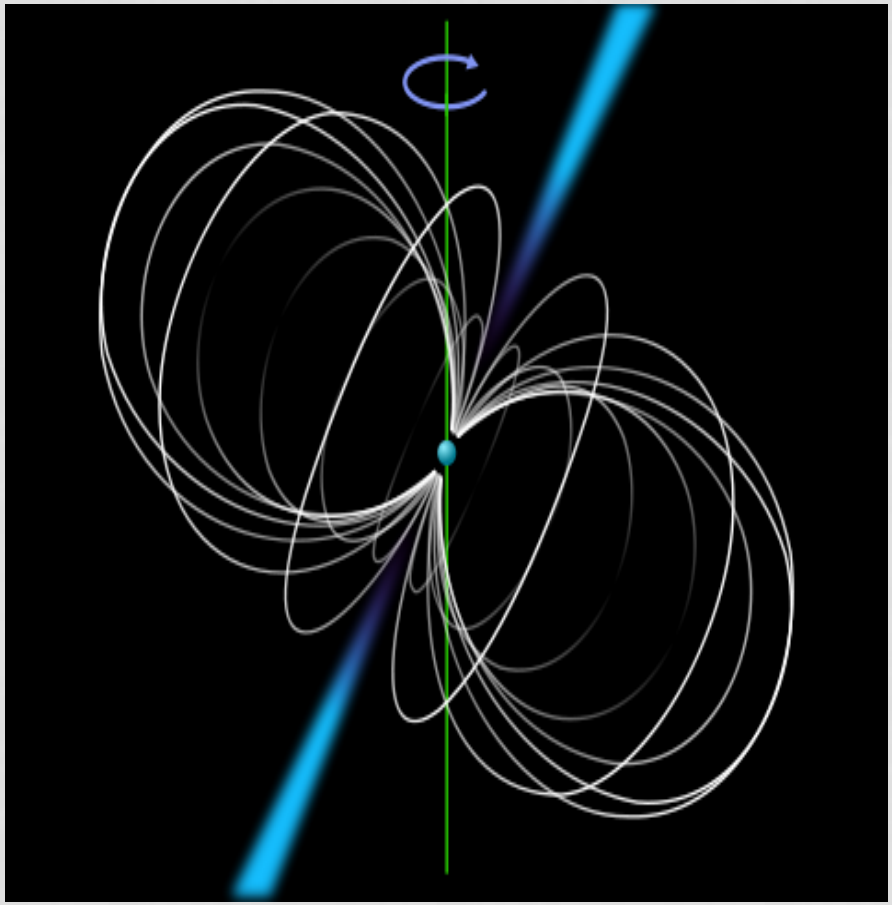
RESEARCH INTERESTS

FERMI SUMMER SCHOOL 2017

LAILA VLEESCHOWER CALAS

PULSARS



Rotating neutron stars with:

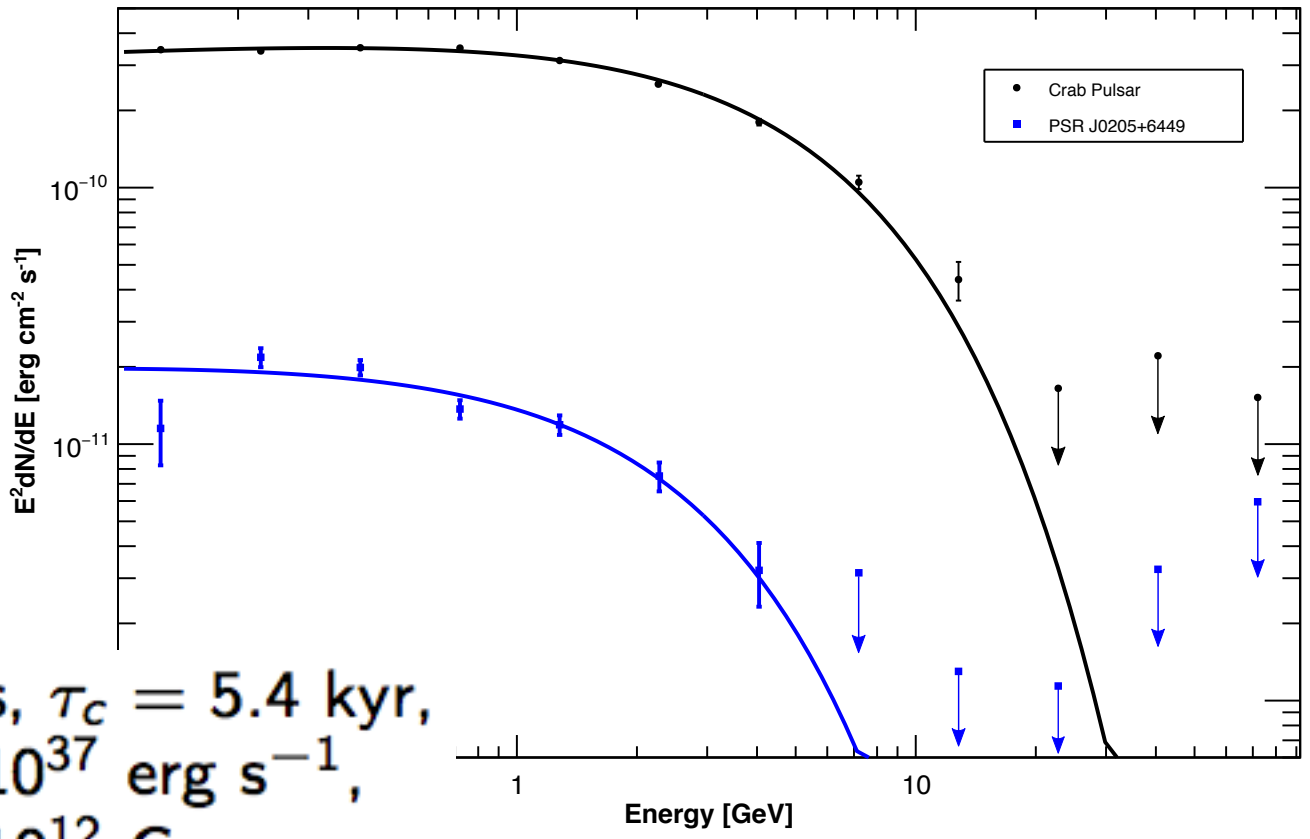
- Frequency: **~1000 Hz**
- Magnetic Field (B): **~10^{12} Gauss**
- Mass: **~1.5 solar masses**
- Radius: **~10 km.**
- Central density: **~10^{14} g/cm^3**

CRAB PULSAR

Hubble image of the Crab Nebula
Credits: NASA and ESA.

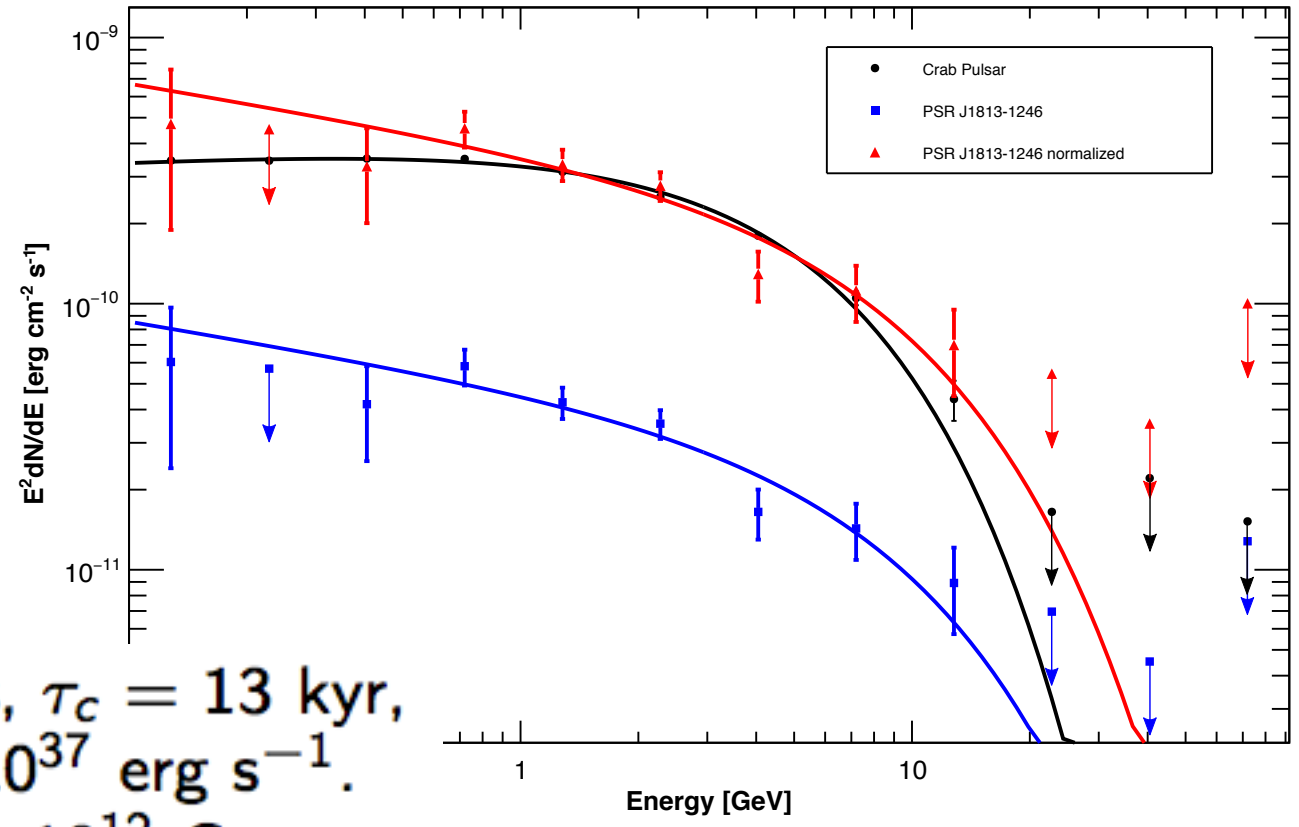
- PSR J0534+2200 isolated pulsar, discovered in 1968.
- Located 10 arc min from the center of the Crab Nebula.
- Period 33 ms, B = 5×10^{12} G, and characteristic age of 1.240 kyr.
- Spin-down luminosity of 4.6×10^{38} erg s^{-1}.
- Pulses in different wavelengths aligned in phase.

PSR J0205-6449



$P = 65$ ms, $\tau_c = 5.4$ kyr,
$\dot{E} \sim 2.7 \times 10^{37}$ erg s^{-1},
$B = 3.7 \times 10^{12}$ G.

PSR J1420-6048



$P = 68$ ms, $\tau_c = 13$ kyr,
$\dot{E} \sim 1.0 \times 10^{37}$ erg s^{-1}.
$B = 2.41 \times 10^{12}$ G.

FUTURE WORK:

- Analyze more pulsars.
- Analyze their light curves.
- Analysis at other wavelengths.
- Analysis with other telescopes.

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THANK YOU!