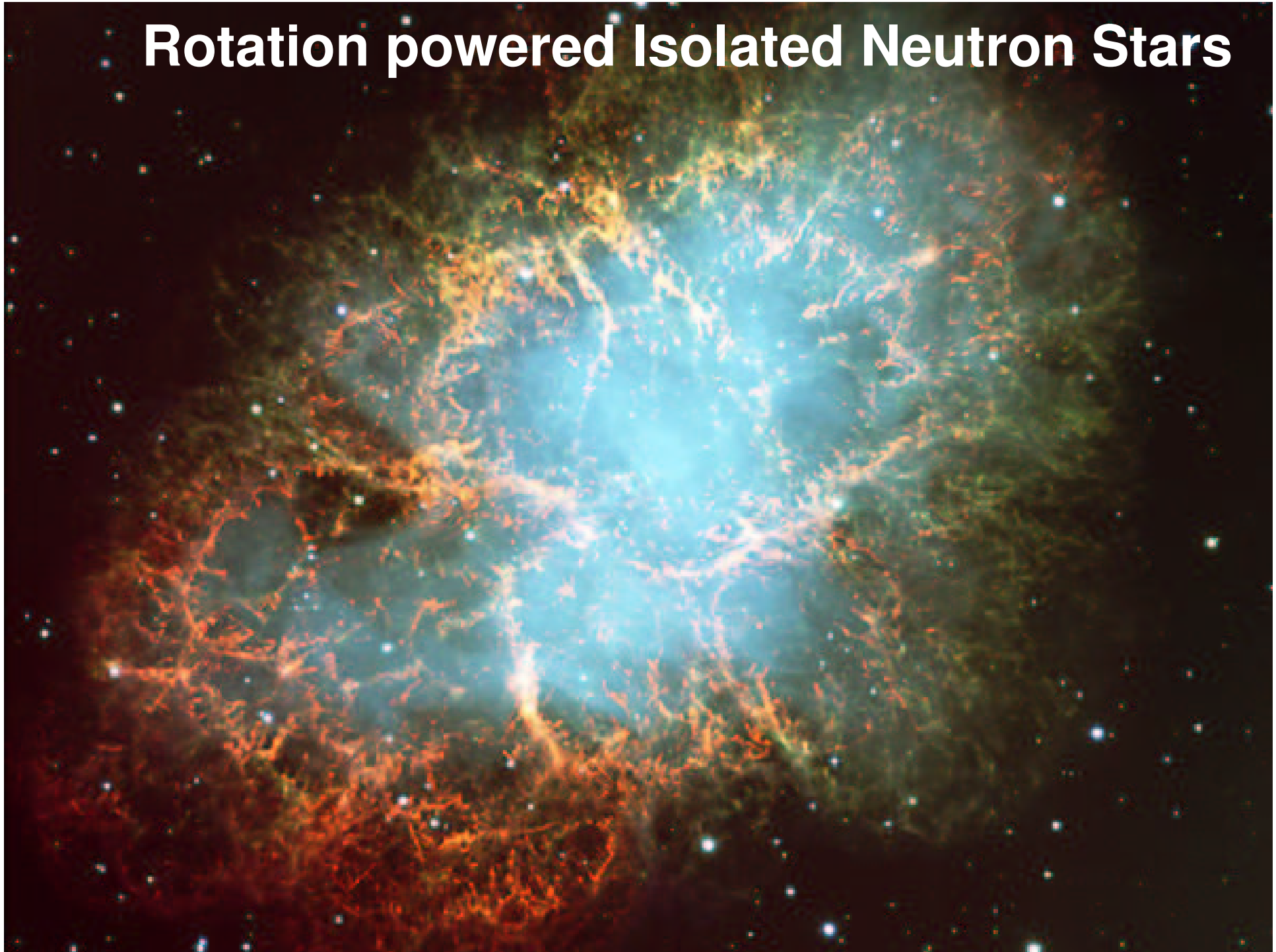
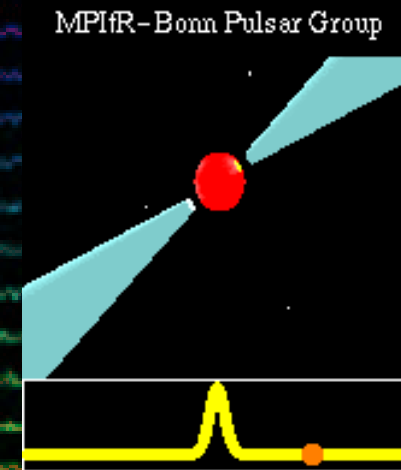


Rotation powered Isolated Neutron Stars

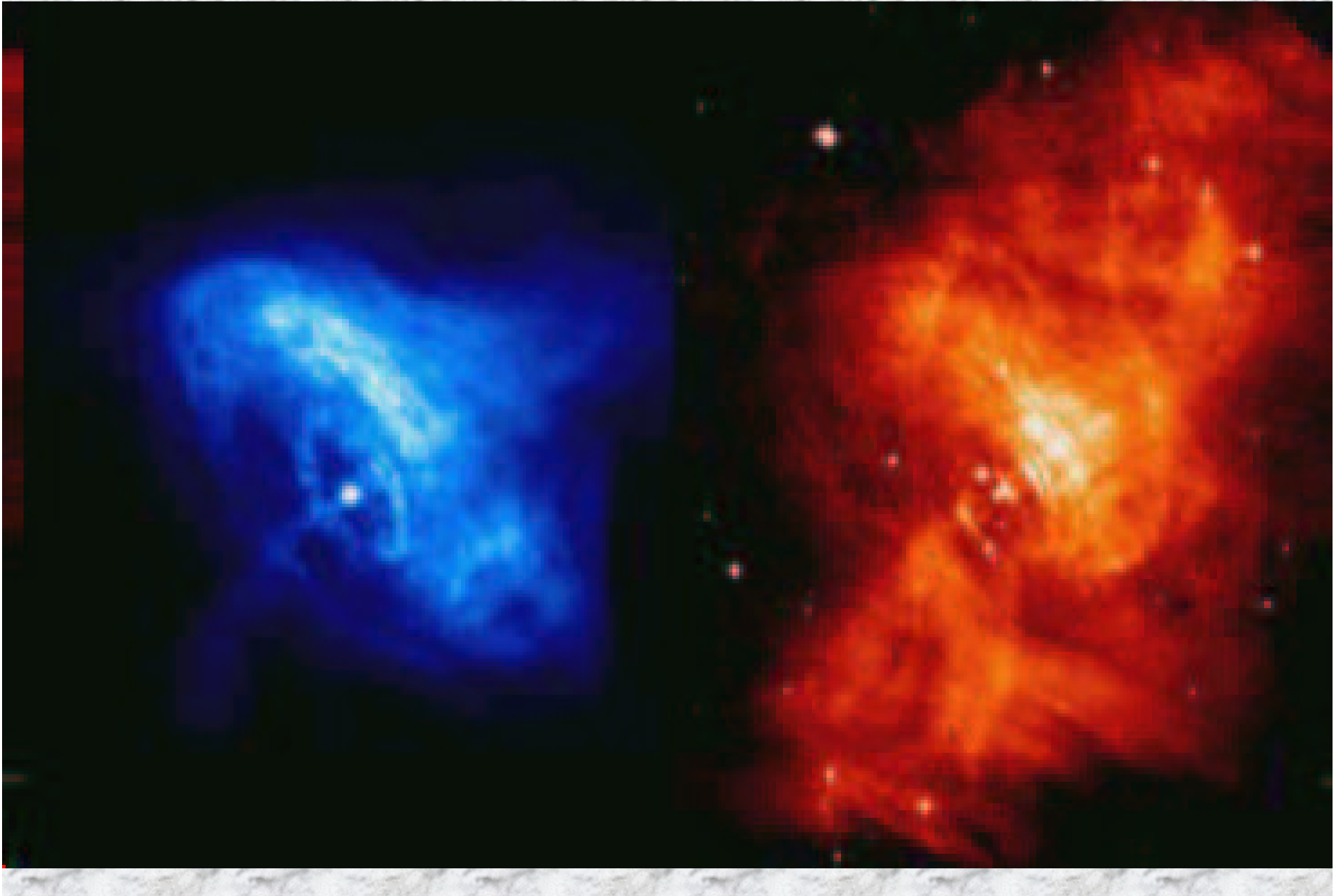


NSs have been discovered (and continue to be discovered) as radio emitters



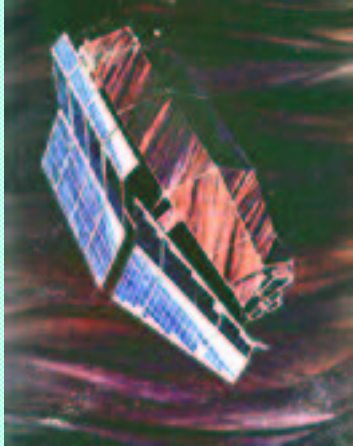
They channel a much bigger fraction of their rotational energy loss in the X and gamma domain

NSs also pump energy in their surrounding

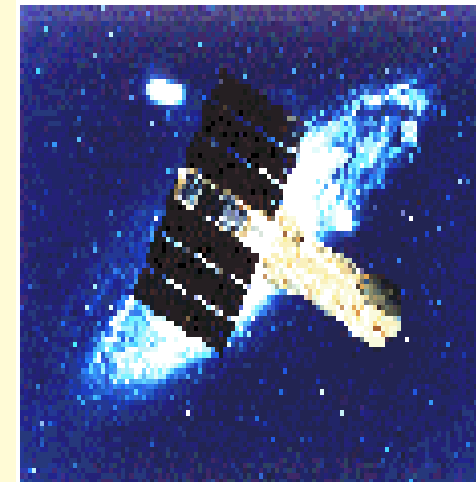


X-ray Observatories

The breakthrough

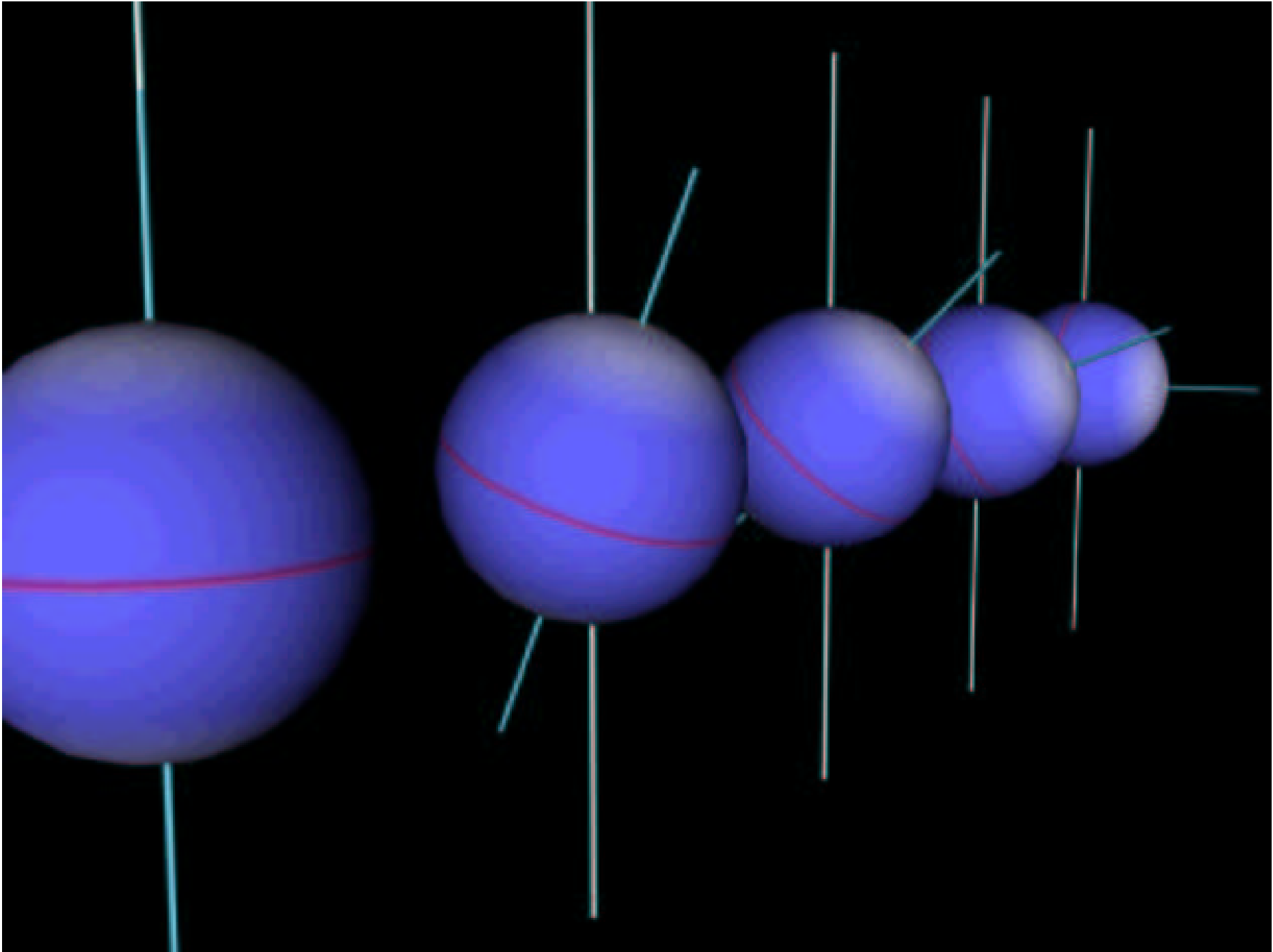


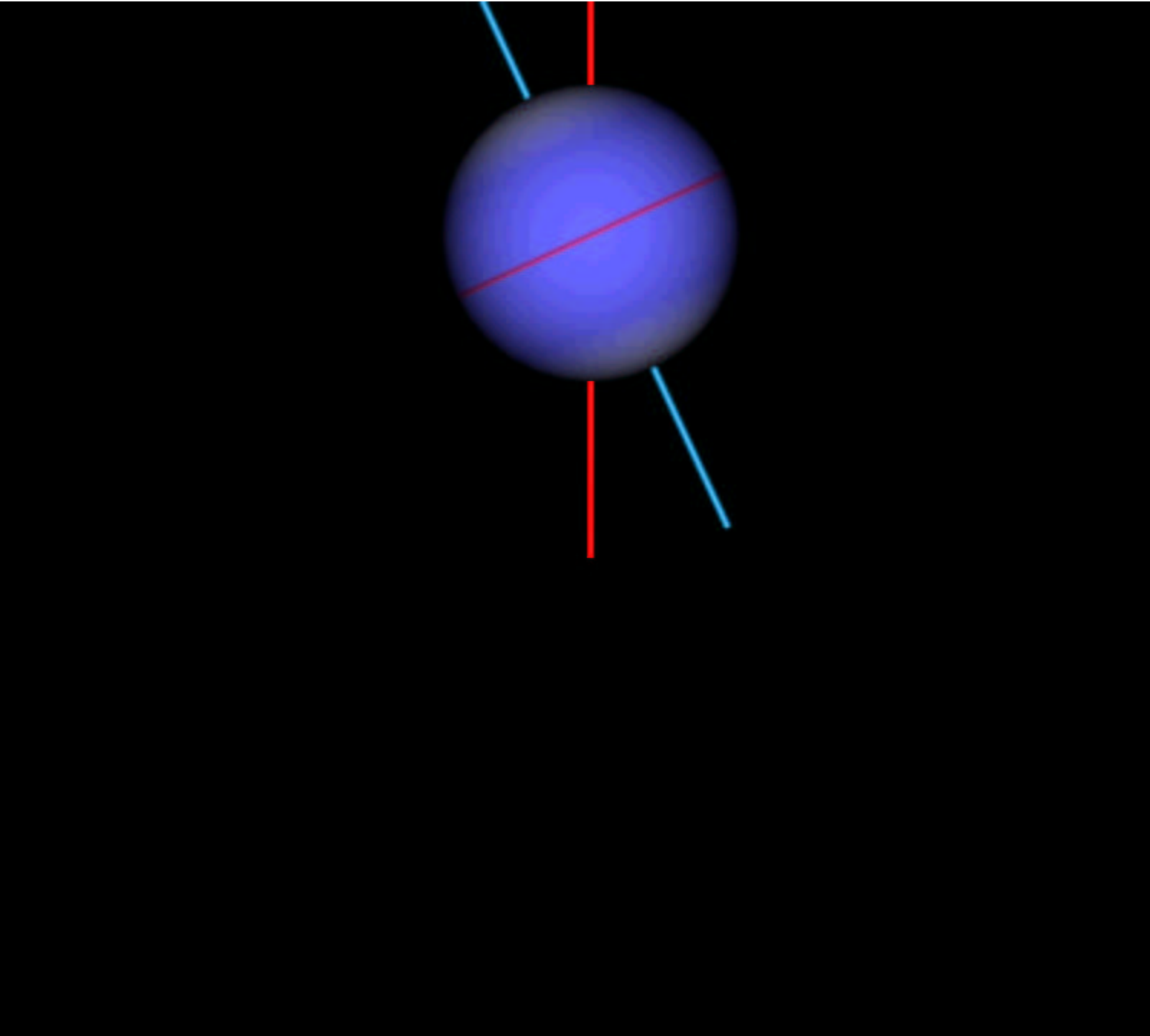
1980'



1990'

**Discovery of several NSs with
non-thermal emission (Crab-like)
thermal emission from their interior cooling**



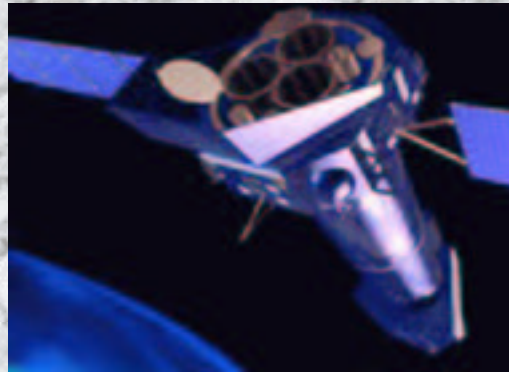


2000 ...

Chandra



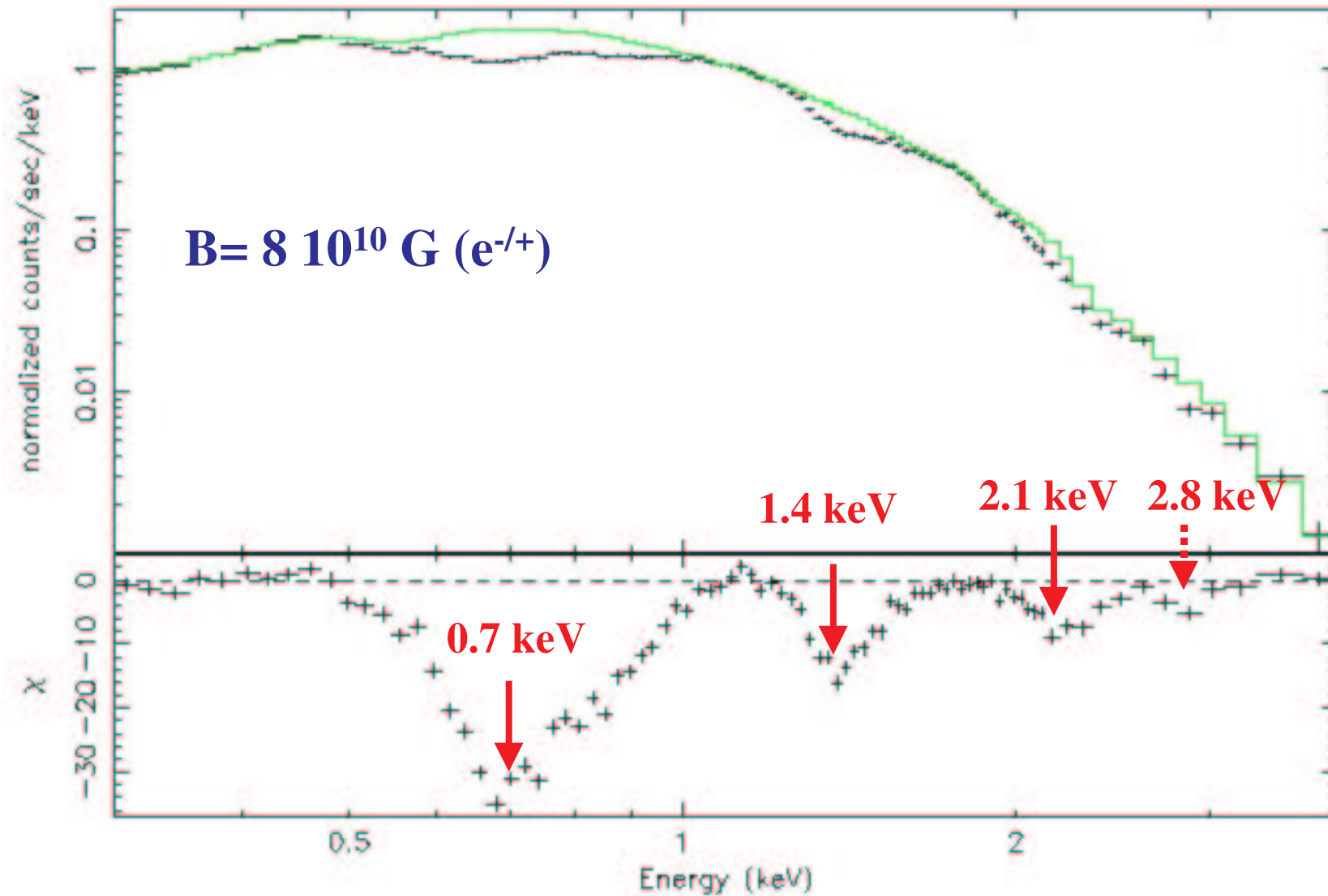
Newton

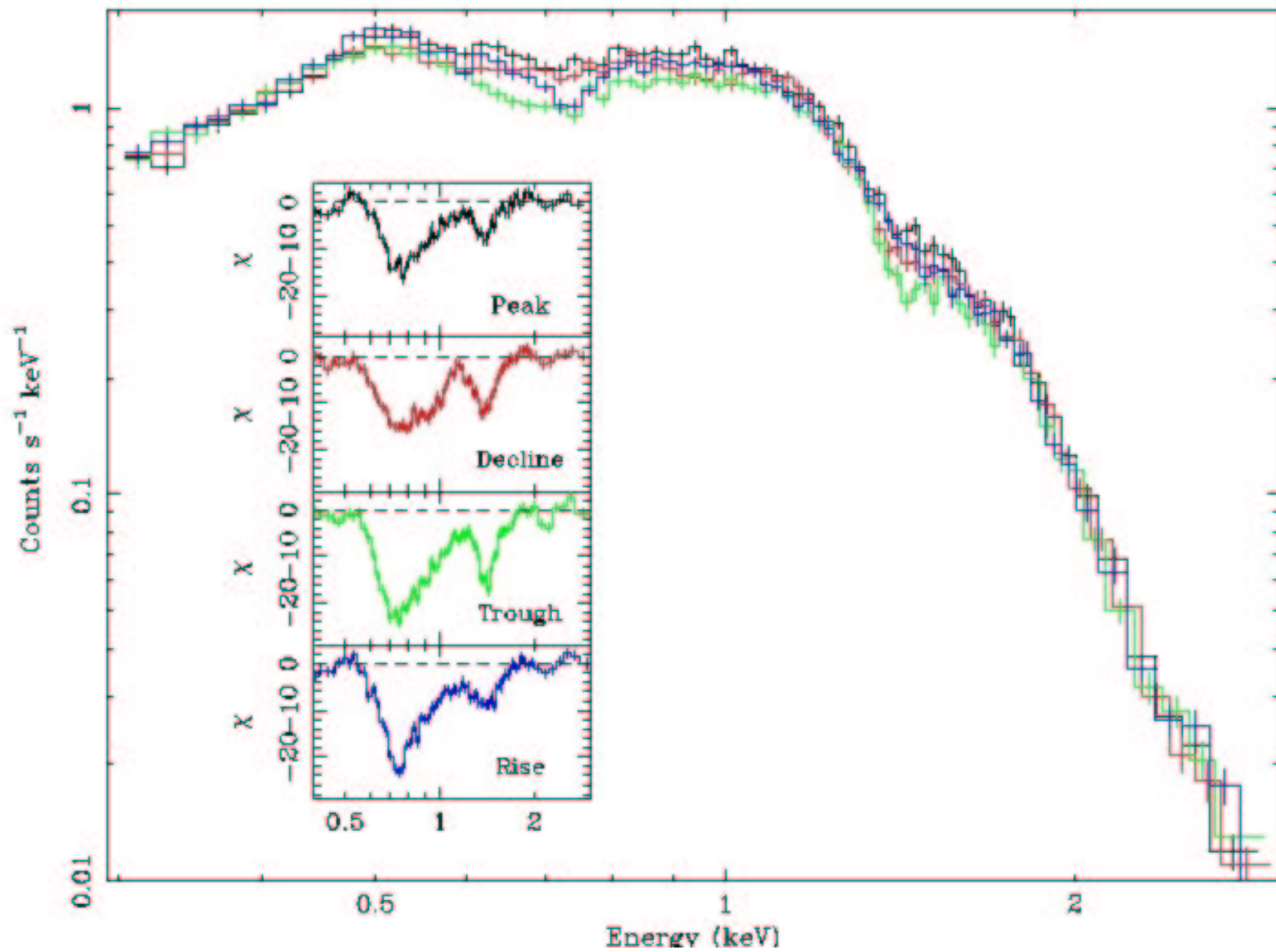


**More NSs, more complex phenomenology
-more young NSs – but underluminous
-several composite-spectrum NSs**

Phase resolved spectroscopy

1E1207-59: discovery of cyclotron absorption lines from an INS





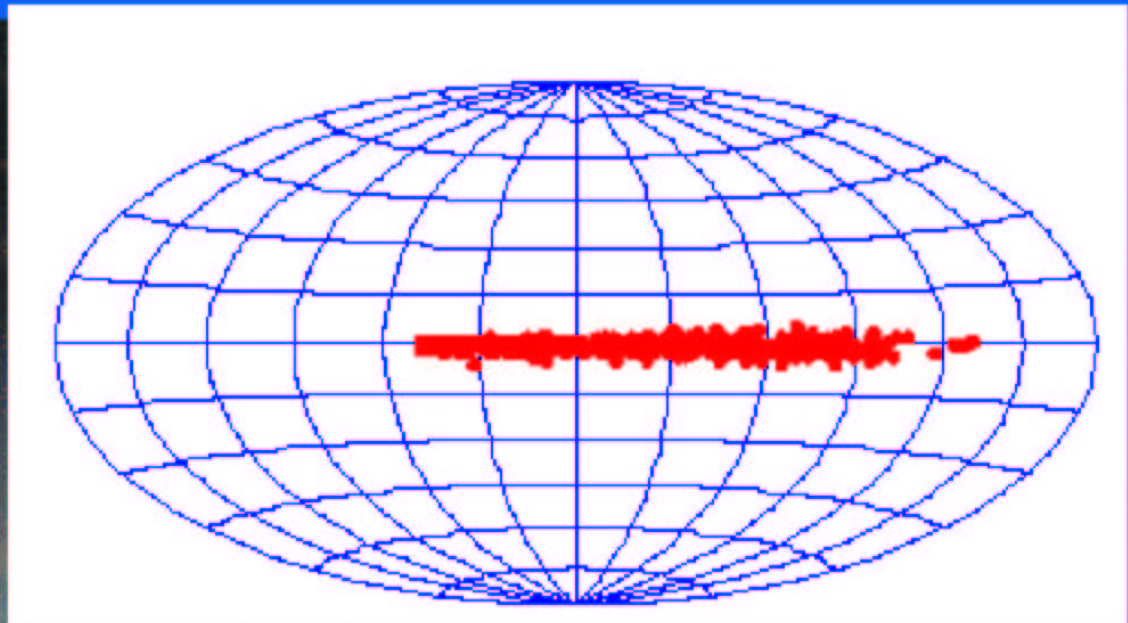
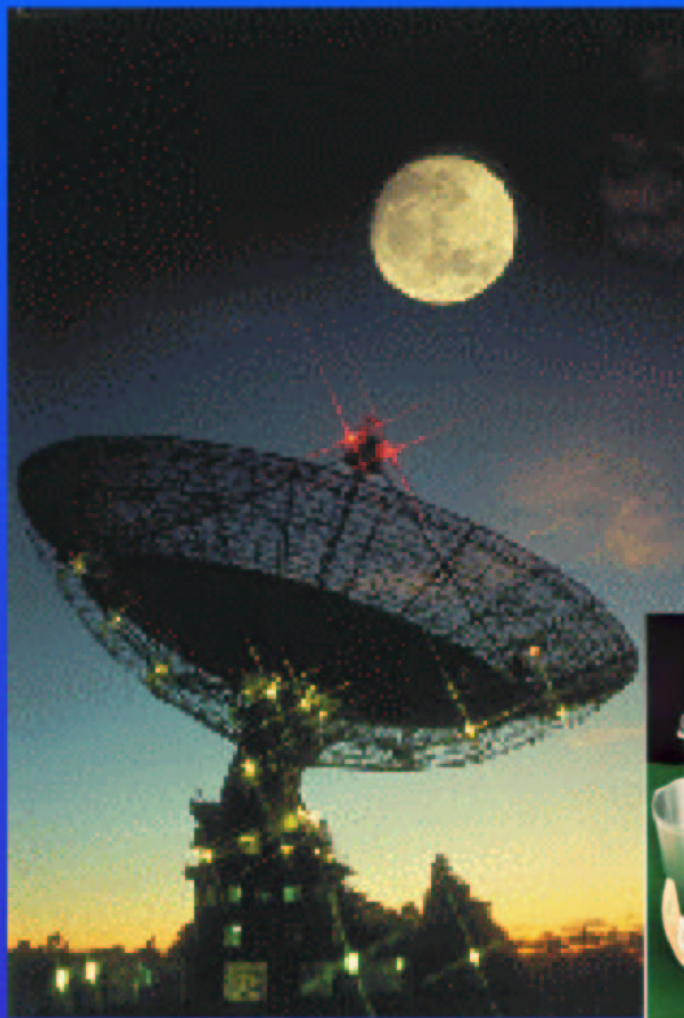
NS census

1400 Radio pulsars (and counting)

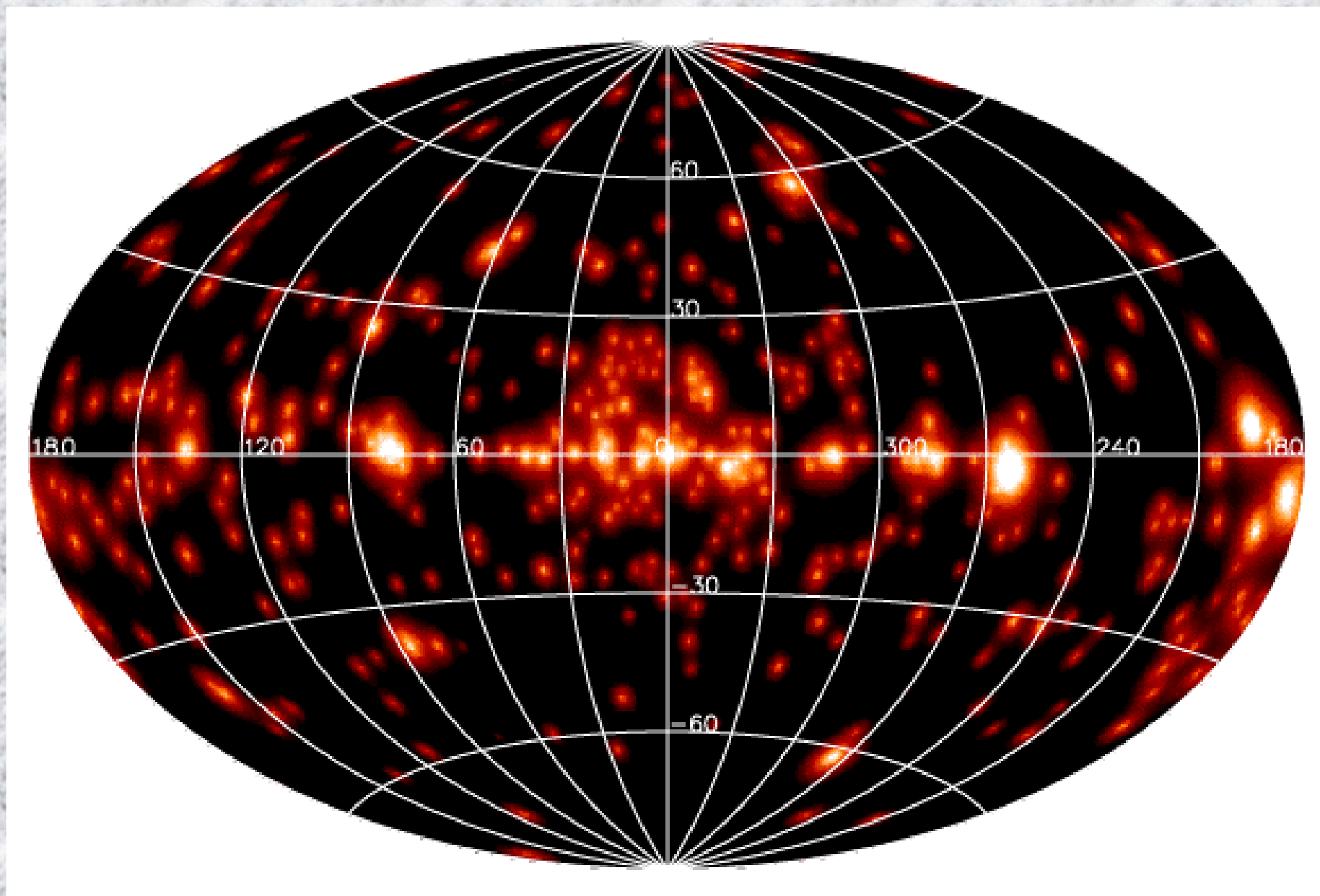
50 x-ray pulsars (and counting)

**7 confirmed gamma-ray pulsar
(and more candidates)**

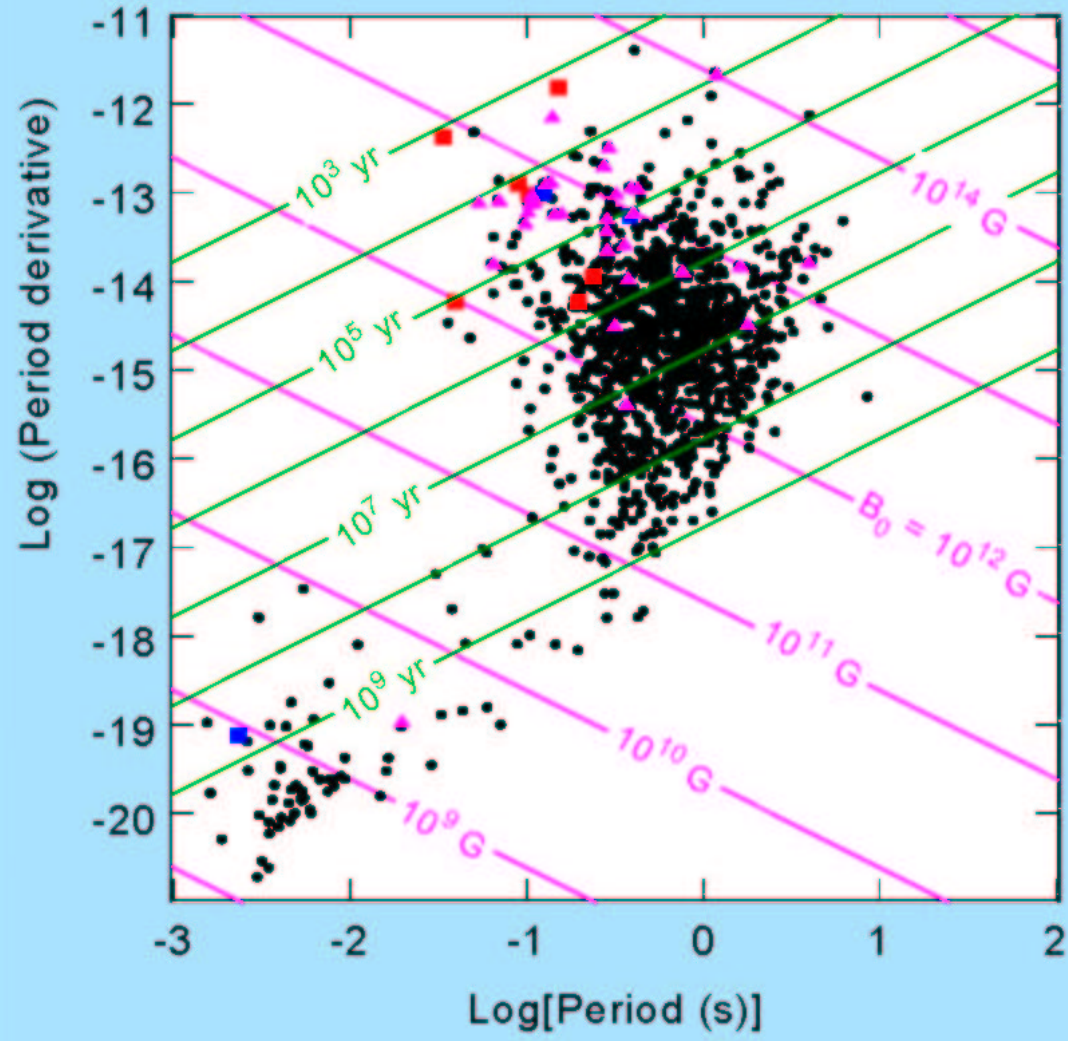
*Parkes multi-beam survey: 775 new
radio pulsars and counting...*



The γ -ray view



ATNF Pulsar Catalog
c. 2002



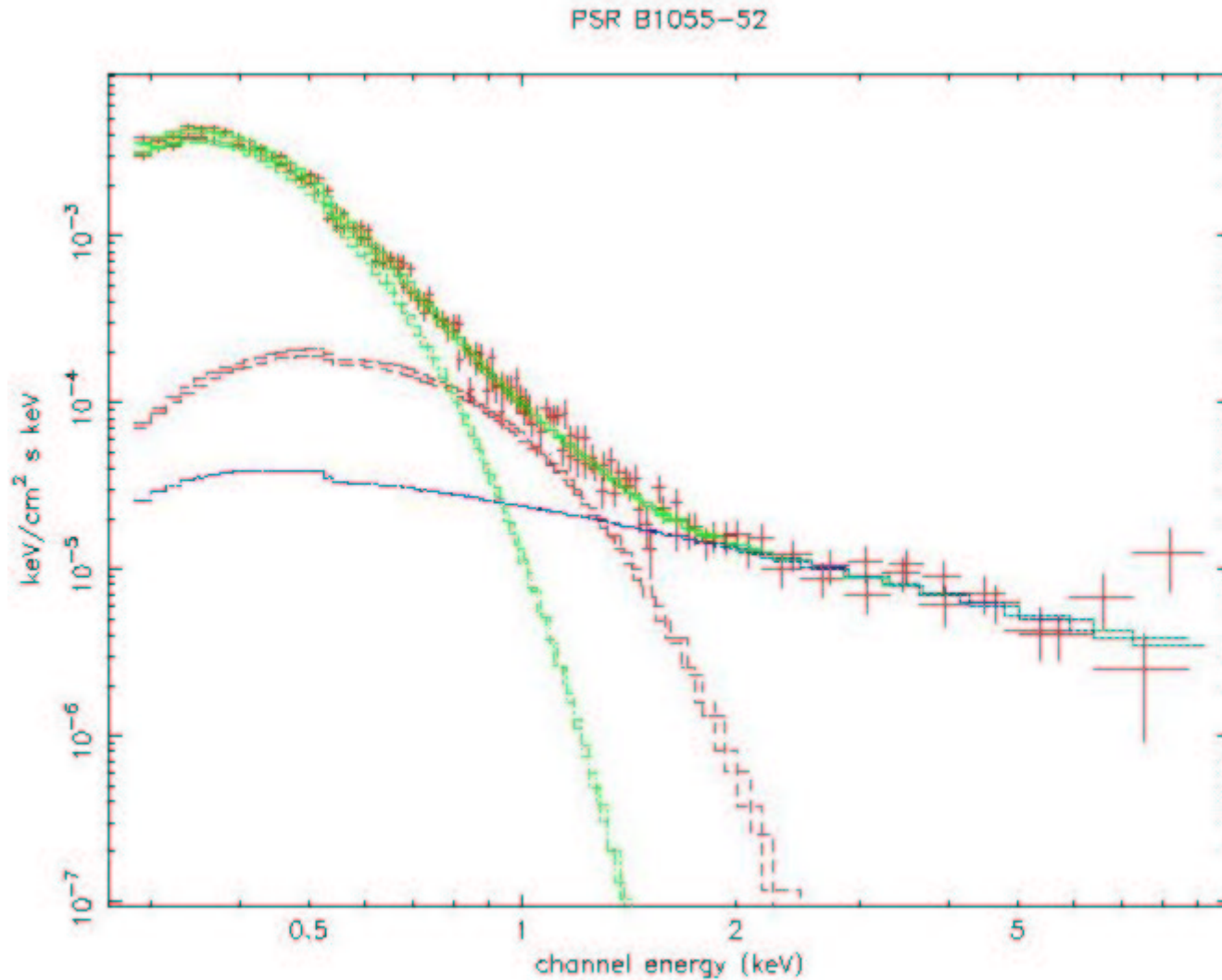
From A. Harding

**Promising candidates
young energetic
pulsars INS with
high energy
emission**

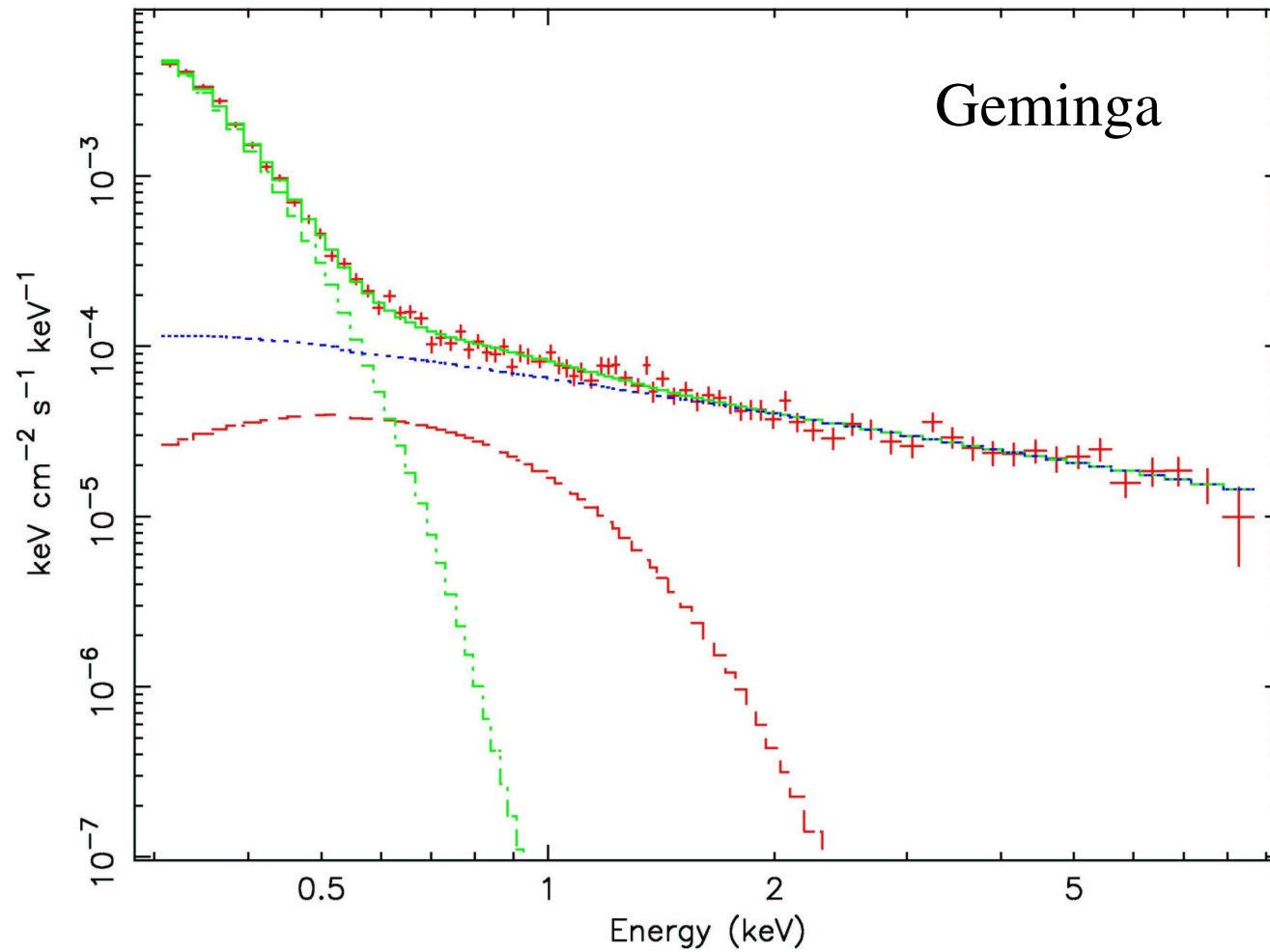
**All, but the Crab,
and Vela
are
Terra incognita**



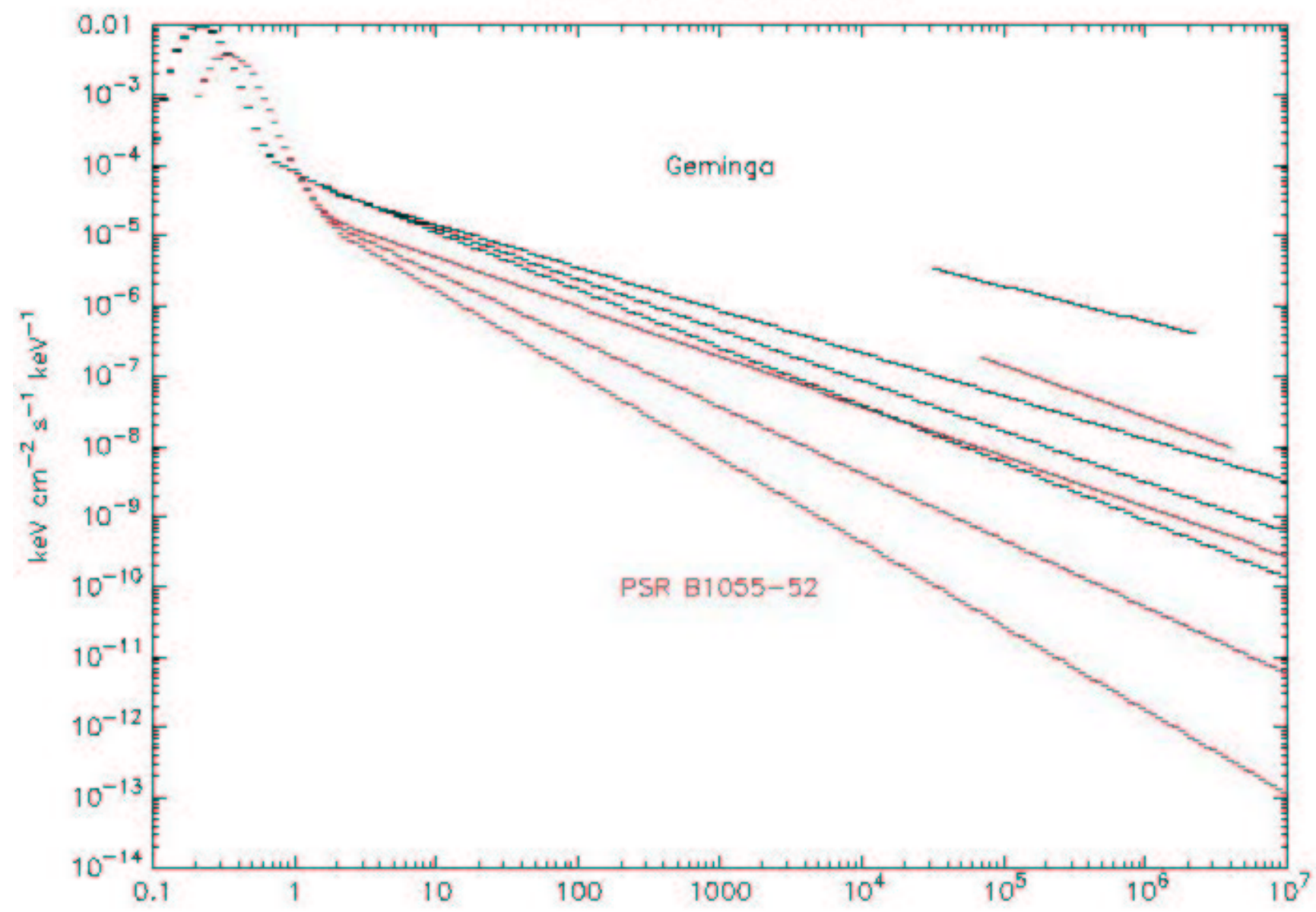
Is there a relation between non-thermal X behaviour and γ -ray emission?



Is there a relation between non-thermal X behaviour and γ -ray emission?



PSR B1055-52 and Geminga



PSR B1055-52 and Geminga

