

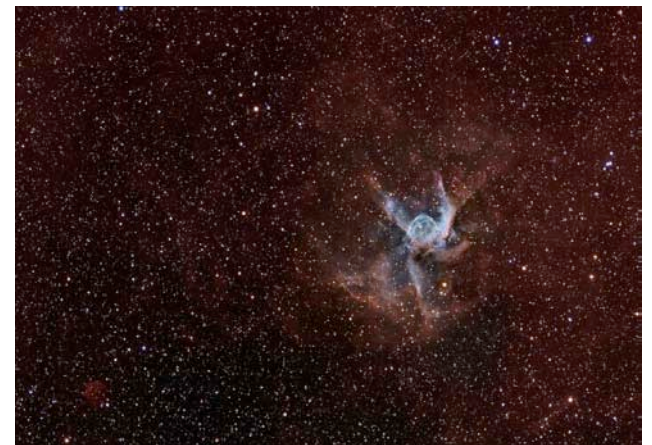
Thursday, March 12, 2009

Reading for Test 3, Chapter 8: Sections 8.1, 8.2, 8.5, 8.6, 8.7, 8.10

***Turn in next Sky Watch after Spring Break*** Tuesday, March 24

Astronomy in the News? Shuttle launch to ISS postponed, problem with hydrogen pump.

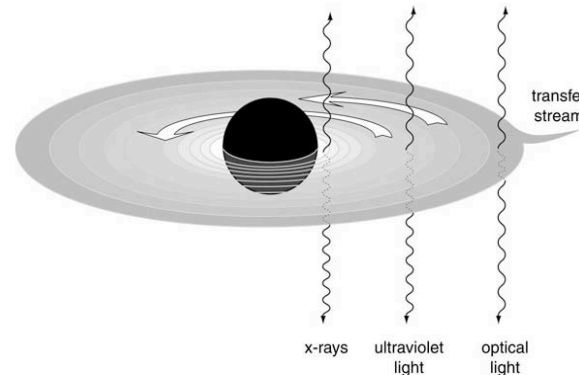
Pic of the Day - Thor's Helmet in Canis Major, a nebula blown by a fast *wind* from a hydrogen-stripped Wolf-Rayet star, possible precursor to a Type Ib or Type Ic supernova.



Radio pulsars are alone in space or in non-transferring binary systems

Other NS are in binaries *with mass transfer*

High gravity of NS, rapid motion in inner disk, great friction, heat  
=> X-rays



In addition, matter lands on, collides with NS Surface => X-rays

*Uhuru* satellite launched from Kenya 1972 found sky ablaze in X-rays:  
Neutron stars and black holes in binary systems. Many satellites  
launched since then, including *Chandra Observatory*.

For strong magnetic field matter connects to, flows *along* magnetic lines of force (can't flow across field lines of force)

This process automatically channels matter to *magnetic* poles

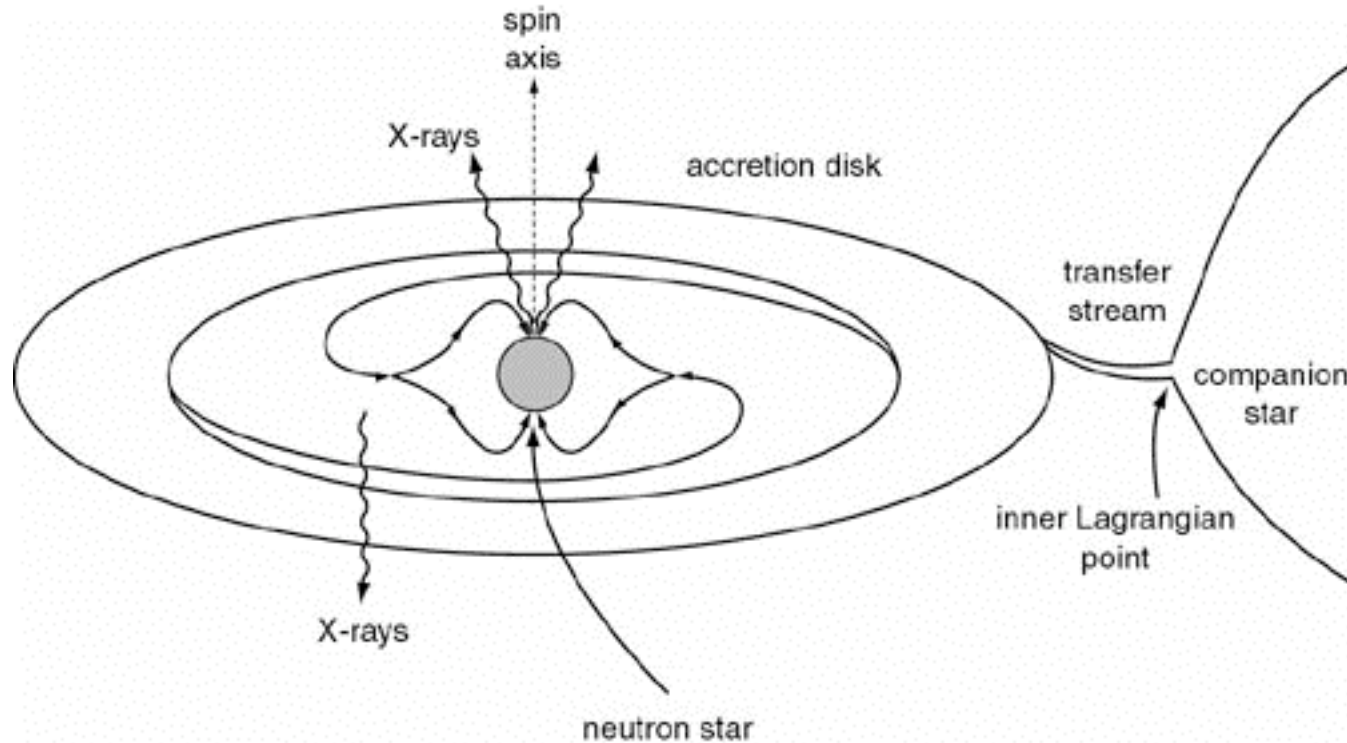
Matter slams into neutron star at the poles, gets hot, emits X-rays (but kills radio)

Rotation can give X-ray “pulses” by the light house mechanism.

Note that will get X-rays from poles when accreting even if the magnetic poles are aligned with the rotation axis, just not lighthouses “pulses.”

Nobel prize in 2002 to for this and related discoveries.

Figure 8.2



Some neutron stars are in binary systems, they accrete mass through an accretion disk and produce ***X-rays***.

Accretion onto *tilted* magnetic poles can give pulses of X-rays by “lighthouse” mechanism