HIGH ENERGY ASTROPHYSICS
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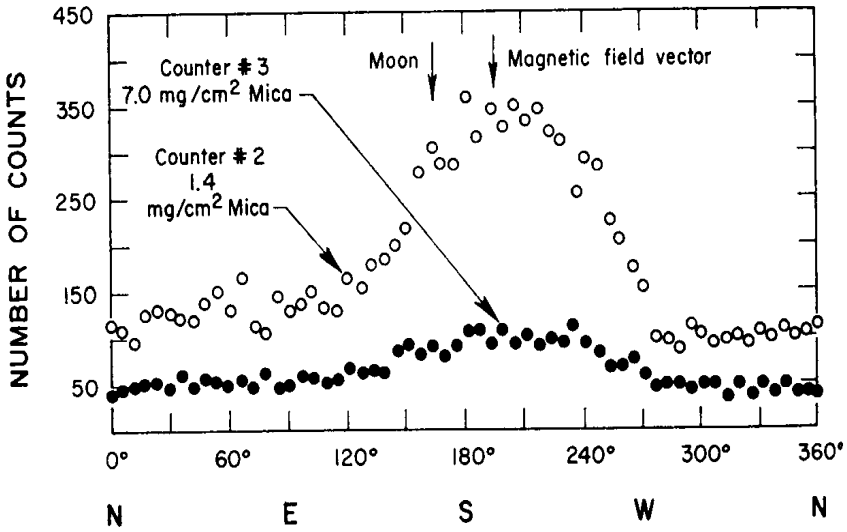
Lectures: Mon/Thur 9-11

WHY HIGH ENERGY EMISSION ?

Since the beginning of X-ray Astronomy ('60s) it was evident that the physical mechanism(s) responsible for the bright X-ray emission was unknown



In the final phases of the evolution of stable objects collapse is opposed to thermal pressure, radiation pressure, degeneracy electrostatic forces and angular momentum.

Collapsed objects includes White Dwarfs, Neutron Stars and Black Holes
In particular WD and NS have very high T cooling surfaces (if isolated).
When in binary system, the strong gravitational field allows matter from the companion to accrete onto the compact object.
Accretion is an extremely efficient mechanism the radiation distribution of which peaks at X-rays and γ-rays.

The course will include the following topics (among others):

- Historical overview from first observations to the identification of accretion mechanism as main channel for energy production;
- Physics of compact objects and main radiative processes;
- Accretion: from theory to observations and backward;
- (Galactic) compact Objects (WDs, NSs and BHCs). Radio Pulsars, X-ray Pulsars. High-magnetic field isolated NSs, Cataclysmic Variables, Black Hole Candidates

A whole day of "laboratory" is also foreseen: What can we learn from the data analysis of high energy emission of compact objects?

Determination of main timing and spectral parameters.