Département d'Astrophysique

Séminaires du DAp

Jeudi 30/11/2006, 11:00

Bât 709, p 220 (salle Godunov), CEA Saclay, Orme des Merisiers

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ON THE PROPELLER EFFECT OF MAGNETIC NEUTRON STARS

I discuss the propeller regime of rapidly rotating magnetic neutron star, the regime in which the magnetospheric boundary between the neutron star and the accretion disk rotates faster that the local Keplerian velocity. In particular I review the analytical conditions under which matter is thought to be ejected away from the system through the propeller mechanism. These conditions have so far been considered in a very idealized fashion.
It has often been postulated that the reason for plasma ejection from the magnetospheric boundary is that, in this region (i) plasma can be forced into corotation with the neutron star or, alternatively, (ii) plasma can bounce elastically against an infinitely rigid "bow string" provided by the magnetic field lines.
It appears from our result, together with some recent MHD simulations, that such kind of interaction is more complicated than expected before and changing the properties of the propeller regime may be of relevance for the evolution of binary systems hosting magnetic neutron stars.

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