

A hypercritical accretion scenario in Central Compact objects accompanied with an expected neutrino burst

The measurement of the period derivative and the canonical model of dipole radiation have provided methods to estimate the low superficial magnetic fields in the so-called Central Compact Objects (CCOs). In the present work, a scenario is introduced to explain the magnetic behavior of such CCOs. Based on MHD simulations of the post core-collapse supernova phase during the hypercritical accretion episode, we argue that the magnetic field of newborn neutron star could have been early buried. During this phase, thermal neutrinos are created mainly by pair annihilation, plasmon decay, photo-neutrino emission and other processes. We study the dynamics of these neutrinos estimating the number and flavor ratio of neutrinos expected on Earth. The neutrino burst is the only viable observable that could provide compelling evidence of the hypercritical phase and then, the hidden magnetic field scenario as an alternative one that could explain the anomalous low magnetic fields estimated for CCOs.

Session and Location

Wednesday Session, Poster Wall #191 (Ballroom)

Poster included in proceedings:

yes

Primary author: Mr MORALES, Gibran (Instituto de Astronomia-UNAM)

Co-author: Dr FRAIJA, Nissim (Instituto de Astronomia-UNAM)

Presenter: Mr MORALES, Gibran (Instituto de Astronomia-UNAM)

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