

# ACCRETING NEUTRON STAR AS A SOURCE OF X-RAY TRANSIENTS, COSMIC RADIATION AND GAMMA RAY LINE SPECTRUM .

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## Abstract

In a close binary system ,when the secondary companion fills up the Roche-lobe ,mass accretion is there onto the compact primary neutron star (ns). The accreted matters contains H,He and less fraction of heavy particles (C,O,Ne,Mg). When the accretion rate is quite high [  $\approx 10^{-10} M_{sun} / \text{year}$  ],temperature (T) and density( $\rho$ )of the (ns) surface increases about [  $T \approx 10^8 \text{ K}$  ,  $\rho \approx 10^6 \text{ g cm}^{-3}$  ] leading to thermonuclear flash .Using the most recent nuclear reaction rates and new beta -decay rates proton capturing cyclic reactions have been studied under these conditions and examined about the generation of transient X-ray burst. Abundances of the nuclei(Z=6-13) have been calculated and compared with the recently observed cosmic ray source composition . Moreover , study of a gamma -ray line spectrum radiated by the excited product nuclei can give us clue to some of the recently observed Gamma -lines and their origin.