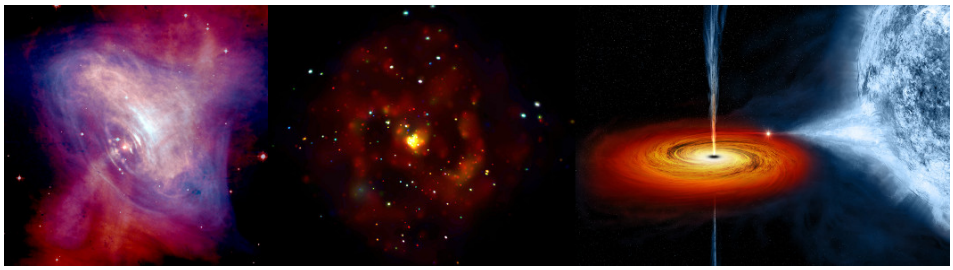

Contribution ID: **131** Type: **not specified**

Spin-down induced neutron star to quark star conversion

The existence of quark stars is an open problem in astrophysics, and their formation is possible in several astrophysical scenarios via the quark-hadron phase transition. We addressed the spin-down induced phase transition scenario, wherein magnetic braking drives neutron stars from their birth (Keplerian rotation) to later stages of life (slow spin). The central density rises during the slowing down stages, and on reaching a critical phase transition density, the neutron star transits to a hybrid star branch, and a quark core is seeded. We computed the mass and size of the quark core during different stages of evolutionary history. The phase transition onset leads to an anomalous change in the magnetic braking index. Also, it can excite the star's f-mode oscillations, leading to burst-type gravitational wave signals in the range of present detectors. The other emissions could be neutrino bursts and GRBs. Detection of these signals and their sky localization may help in finding the quark/hybrid stars formed via phase transition events.

Presentation Type

Poster

Primary author: R, Prasad (IISER Bhopal)

Presenter: R, Prasad (IISER Bhopal)

Session Classification: Posters

Track Classification: Posters