



Contribution ID: 142

Type: Talk

## X-ray Emission spectrum from strongly magnetized neutron stars due to axion to photon conversion

Wednesday 28 August 2024 11:20 (20 minutes)

, We employ here the modified system of Tolman–Oppenheimer–Volkoff (TOV) equations due to the presence of a magnetic field to study the emission properties of the strongly magnetized neutron stars (NSs). We have considered the distance-dependent magnetic field in the modified TOV system of equations. We used three different equations of states (EoSs), namely APR, FPS, and SLY to solve these equations. We then obtain the axions emission rate by including the Cooper-pair-breaking formation process and Bremsstrahlung process in the core of NSs using the NSCool code. We primarily focus on Magnificent seven (M7) star RXJ 1856.5-3754. We further investigate the impact of the magnetic field on the actual observables, such as axion energy spectrum and axion-converted-photon flux at an axion mass in meV range for NSs with mass 1.4 solar mass. We finally compare our prediction of axion-converted-photon flux with PN + MOS + Chandra data sets and obtained a reasonable agreement with the data. .

### Internet talk

No

### Is this an abstract from experimental collaboration?

No

### Name of experiment and experimental site

NA

### Is the speaker for that presentation defined?

Yes

### Details

NA

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**Session Classification:** Workshop on Astro-Cosmo-Gravity

**Track Classification:** Workshops & Special Sessions: Workshop on Astro-Cosmo-Gravity