## Exploring Physics Beyond the Standard Model via Temperature Observations of Neutron Stars

Thursday, 26 June 2025 09:30 (1 hour)

I will discuss how temperature observations of neutron stars provide a unique window to explore physics beyond the Standard Model of particle physics. Neutron stars, with their extreme environments, serve as natural laboratories for testing the limits of our physical understanding. The standard cooling theory, which accounts for the cooling of isolated neutron stars through neutrino and electromagnetic radiation, generally aligns with observational data. However, the presence of hypothetical particles such as axions and dark matter, predicted by theories that extend the Standard Model, could alter this cooling behavior. Axions, for example, increase cooling rates, while dark matter interactions could lead to additional heating. By comparing revised theoretical predictions with observed temperature evolution, we might explore signs of these elusive particles.

## Please choose your topic

Compact Objects & Particles

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