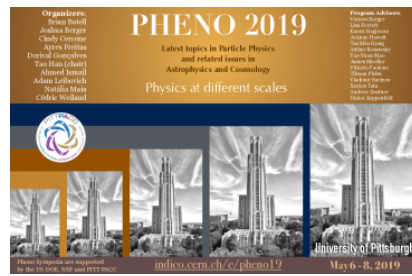


Phenomenology 2019 Symposium



Contribution ID: 702

Type: parallel talk

X-ray signatures of axion conversion in magnetic white dwarf stars

Monday 6 May 2019 14:45 (15 minutes)

White dwarf (WD) stars may radiate keV-energy axions produced in their stellar cores. This has been extensively studied as an extra channel by which WDs may cool, with some analyses even suggesting that axions can help explain the observed WD luminosity function. We show that the radiated axions may convert into X-rays in the strong magnetic fields surrounding the WDs, leading to observable X-ray signatures. We use Suzaku observations of the WD RE J0317-853 to set the strongest constraints to-date on the combination of the axion-electron times axion-photon couplings, and we show that dedicated observations of magnetic WDs by telescopes such as Chandra, XMM-Newton, and NuSTAR could increase the sensitivity to these couplings by over an order of magnitude, allowing for a definitive test of the axion-like-particle explanation of the stellar cooling anomalies.

Summary

axion-like particle, astro-particle physics, it's not axion dark matter but the talk would be interesting for the participants of the DM session

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Session Classification: Axions & ALPs