

Sterile neutrinos

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Limits on sterile neutrino dark matter

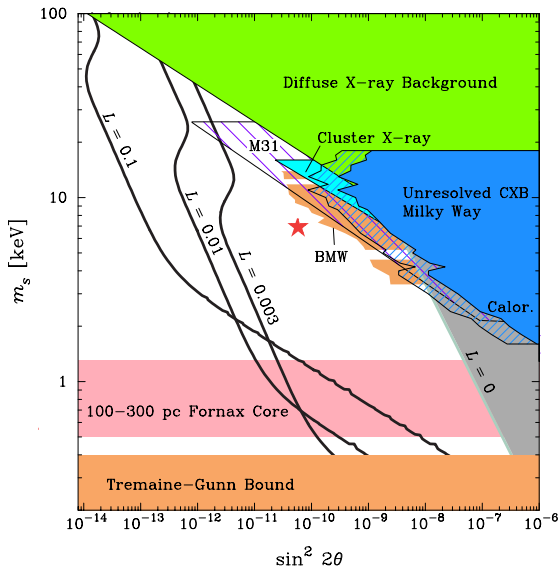
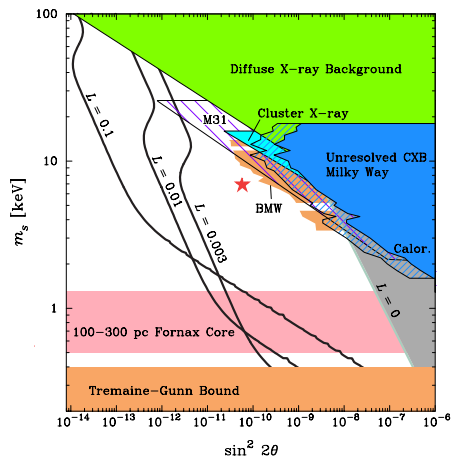


Figure from Bulbul et al., arXiv:1402.2301

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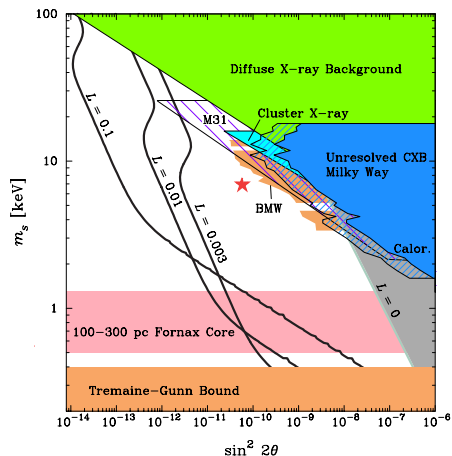


- Limits on x-ray limits from

- ▶ Diffuse x-rays
- ▶ Unresolved Milky Way x-rays
- ▶ Milky Way (“BMW”)
- ▶ Andromeda galaxy (M31)
- ▶ Galaxy clusters

Figure from Bulbul et al., arXiv:1402.2301

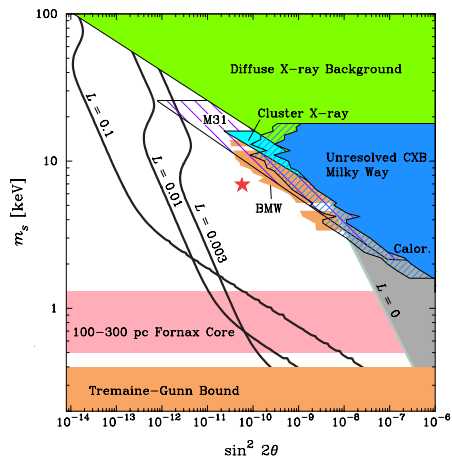
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- Limits on x-ray limits from
- Correct relic density for Dodelson-Widrow scenario ($L = 0$) and Shi-Fuller scenarios ($L > 0$)

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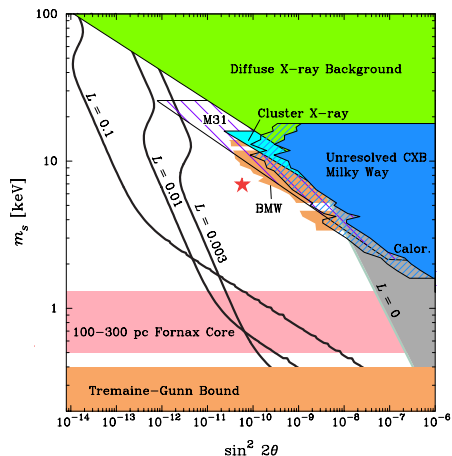
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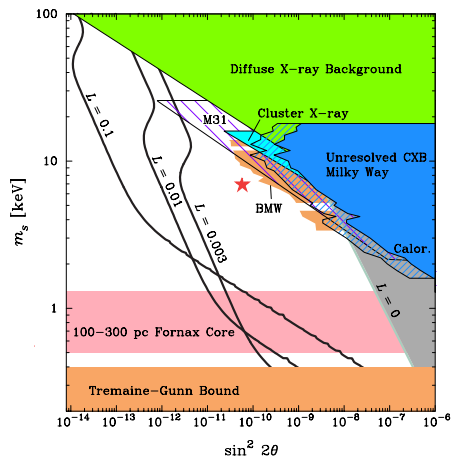
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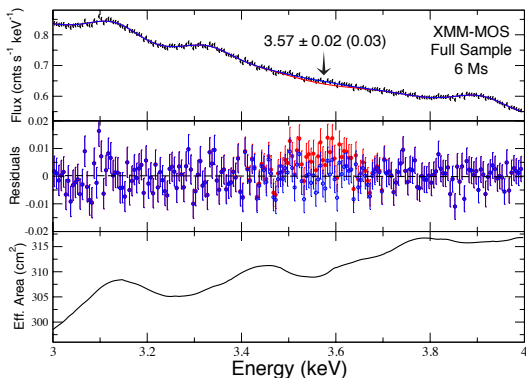
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- ... and: a possible detection?

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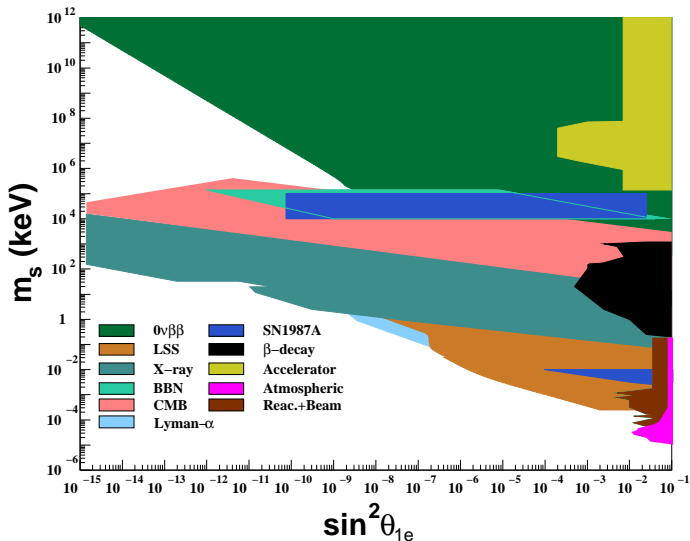
An x-ray line in galaxy clusters?



- Stacked x-ray spectra from many galaxy cluster (redshift corrected)
- Excess around **3.55 keV**
- If confirmed: sterile neutrino explanation would require production mechanism other than Dodelson-Widrow

More limits on sterile neutrino DM

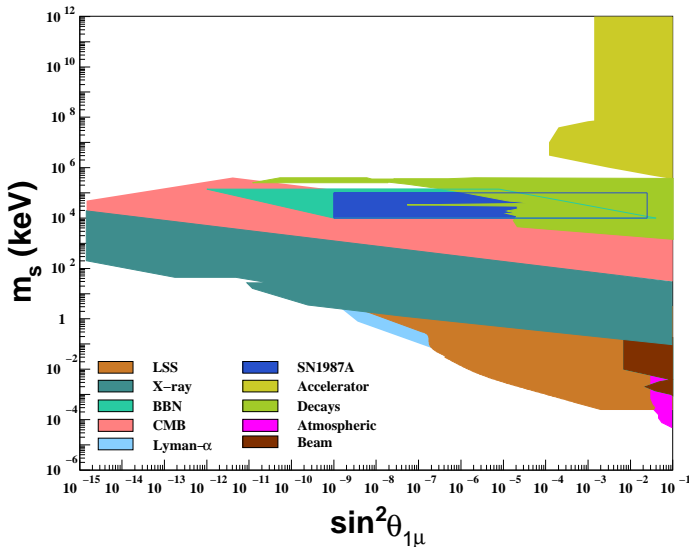
Mixing between ν_s and ν_e



Kusenko 0906.2968

More limits on sterile neutrino DM

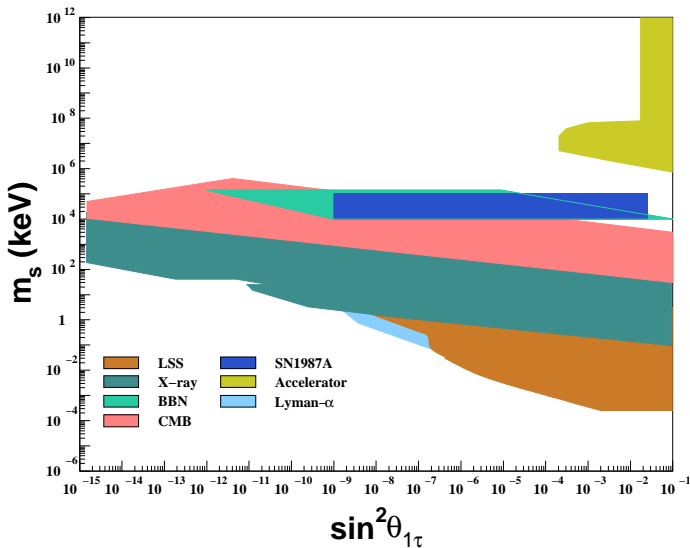
Mixing between ν_s and ν_μ



Kusenko 0906.2968

More limits on sterile neutrino DM

Mixing between ν_S and ν_τ



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