

# Predictions for a 3.55 keV photon line from dark matter decay to axions in the Milky Way

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I describe predictions for Milky Way halo dark matter decay to 3.55 keV axion like particles (ALPs) followed by ALP to photon conversion in the Milky Way's magnetic field. A scenario in which the 3.55 keV line observed in galaxy clusters and Andromeda is caused by dark matter decay to ALPs, which then mix with the photon in astrophysical magnetic fields is particularly well-motivated by the observed morphology of the 3.55 keV flux. The Milky Way's magnetic field is highly asymmetric about the galactic centre, and so the 3.55 keV flux morphology in the ALP scenario differs significantly from that expected if the dark matter decays directly to photons. I also examine this phenomenon in Andromeda, and give predictions for the 3.55 keV line flux from the Milky Way and Andromeda in the ALP scenario.

## Summary

I describe predictions for Milky Way halo dark matter decay to 3.55 keV axion like particles (ALPs) followed by ALP to photon conversion in the Milky Way's magnetic field.

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