

# Cosmological constraints on thermal axions and neutrinos from Planck 2015 temperature and polarization data

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## Summary

Recent Cosmic Microwave Background (CMB) temperature and polarization anisotropy measurements from the Planck mission have significantly improved previous constraints on the neutrino masses, as well as the bounds on extended models with massive sterile neutrino states or extra particles, as for example thermal axions. I will show the recent constraints from cosmology for the thermal axion mass and the total neutrino mass, considering several combination of datasets and scenarios. In particular, I will show how the inclusion of additional low redshift priors is mandatory in order to sharpen the CMB neutrino bounds, and that we are close to test the neutrino mass hierarchy with existing cosmological probes.

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