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Cosmological Constraints on Neutrinos

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The cosmic background of neutrinos (the CNB) created during the big bang has been definitively detected via its gravitational influence. Ongoing measurements are now giving increasingly precise answers to questions such as 1) what is the energy density contained in the CNB? 2) what are the masses of the particles making up the CNB? and 3) are these particles really neutrinos, e.g. do they free-stream like neutrinos? I will discuss answers to these questions from cosmological probes such as baryon acoustic oscillations or local Hubble constant measurements, and with particular focus on the Planck 2015 cosmic microwave background results. One possibility I will explore is if axions or axion-like particles can be masquerading as a component of the CNB. Recent improvements from Planck and from big bang nucleosynthesis measurements have been placing increasingly tight constraints on this scenario.