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Measuring Neutrinos with Cosmology

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Along with a thermal distribution of photons, we expect a thermal distribution of neutrinos to have been produced in the big bang. Although direct detection of the cosmic neutrino background (CNB) is extremely difficult, if not impossible, there is much we are learning indirectly about the CNB from its gravitational influences. I will review constraints from cosmic microwave background observations on the energy density in the CNB, present a recent detection of supersonic evolution of density perturbations in the CNB, and discuss constraints on neutrino masses from cosmological observables. I will also look toward what we can expect from future cosmological surveys, such as CMB-S4.