APR14-2014-000523

Abstract for an Invited Paper
for the APR14 Meeting of
the American Physical Society

Cosmological constraints on number of neutrinos and neutrino masses

ZHEN HOU, University of California, Davis

The number of species of neutrinos ($N_{\rm eff}$) and the neutrino masses (Σm_ν) has been constrained by the measurement of cosmological signals, including the power spectrum of cosmic microwave background (CMB), baryon acoustic oscillations (BAO) and the expansion rate of local Universe (H_0). I will report the recent constraints on $N_{\rm eff}$ and Σm_ν by CMB measurements from WMAP, SPT and especially Planck satellite and its combination with BAO or H_0 measurement. The physical stories of how $N_{\rm eff}$ and Σm_ν are constrained are different. They come from the different features on different angular scales of CMB power spectrum, which will be presented given the current precision of Planck data. I will show how $N_{\rm eff}$ and Σm_ν are further constrained by adding BAO and H_0 data. The impact of $N_{\rm eff}$ and Σm_ν to the consistency between CMB, BAO and H_0 data will also be discussed.