



Contribution ID: 35

Type: Poster

Direct comparison of sterile neutrino constraints from cosmological data, electron neutrino disappearance data and muon neutrino to electron neutrino appearance data in a 3+1 model

We present a quantitative comparison of constraints on sterile neutrinos from neutrino oscillation experiments and from Planck data. We find that the cosmological data fully exclude the allowed regions from the LSND, MiniBooNE and Neutrino-4 collaborations, and those from the gallium and reactor anomalies, at the 95% CL. Compared to the exclusion region from the Daya Bay ν_e -disappearance search, the Planck data are more strongly excluding above $|\Delta m_{41}^2| \approx 0.1 \text{ eV}^2$ and $m_{\text{eff}}^{\text{sterile}} \approx 0.2 \text{ eV}$, with the Daya Bay exclusion stronger below this. Compared to the combined Daya Bay/Bugey/MINOS exclusion region on $\nu_\mu \rightarrow \nu_e$ appearance, the Planck data is more strongly excluding above $\Delta m_{41}^2 \approx 5 \times 10^{-2} \text{ eV}^2$, with the exclusion strengths becoming comparable below this.

Mini-abstract

We compare sterile neutrino limits from the CMB to those from neutrino oscillation experiments.

Primary author: Prof. EVANS, Justin (University of Manchester)

Co-authors: Dr GUZOWSKI, Pawel (University of Manchester); Prof. SOLDNER-REMBOLD, Stefan (University of Manchester)

Presenters: Prof. EVANS, Justin (University of Manchester); Dr GUZOWSKI, Pawel (University of Manchester); Prof. SOLDNER-REMBOLD, Stefan (University of Manchester)

Session Classification: Poster session 4