

物理工学談話会

Observation of a Significant Excess of Electron-Like Events in the MiniBooNE Short-Baseline Neutrino Experiment

香取哲平 (Queen Mary University of London)

8月3日(金) 15:00- @ 総合研究棟W701

The MiniBooNE experiment at Fermilab reports results from an analysis of electron neutrino (ν_e) appearance data from $1.3E21$ protons on target (POT) in neutrino mode, an increase of approximately a factor of two over previously reported results (PRL110(2013)161801). A ν_e charged-current quasi-elastic (CCQE) event excess of 381.2 ± 85.2 events (4.5σ) is observed in the energy range $200 < E_{\nu QE} < 1250$ MeV.

Combining these data with the electron anti-neutrino ($\bar{\nu}_e$) appearance data from $1.1E21$ POT in antineutrino mode, a total ν_e plus $\bar{\nu}_e$ CCQE event excess of 460.5 ± 95.8 events (4.8σ) is observed. If interpreted in a standard two-neutrino oscillation model (ν_{μ} to ν_e), the best oscillation fit to the excess has a probability of 20.1% while the background-only fit has a χ^2 -probability of $5E-7$ relative to the best fit. All of the major backgrounds are constrained by in-situ event measurements, so non-oscillation explanations would need to invoke new anomalous background processes. Although the data are fit with a standard oscillation model, other models may provide better fits to the data. <https://arxiv.org/abs/1805.12028>

どなたでも気軽にご参加ください。

世話人: 南野彰宏 (4182)