

Systematic Studies for a Photon-like Low Energy Excess Search at MicroBooNE

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The MicroBooNE detector at Fermilab was built to primarily investigate the “low energy excess” (LEE) of electron neutrino and antineutrino charged current quasi-elastic events observed in the MiniBooNE experiment. One of the possible interpretations of the MiniBooNE LEE is that it is comprised of neutrino-induced single-photon events. MicroBooNE is testing this hypothesis via a study of neutral current resonant delta production with subsequent radiative decay. This talk will cover the related studies to fully understand the systematic uncertainties of this single photon analysis, including re-weighting Monte Carlo events to estimate the effect of many flux and cross-section uncertainties as well as detector systematics. The analysis has secondary signal studies including neutral current pion production and subsequent decay which are used to constrain our final measurements. Simulations of this constraint predicting the impact on the results will also be shown.

Summary

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