Contribution ID: **6** Type: **Poster**

Natural radioactivity and related background in Daya Bay experiment

In low background neutrino experiments, natural radioactivity makes the largest contribution to single event rate, and the related 13C(α,n)16O background can mimic anti-neutrino signal if the detector is liquid scintillator or Gd-doped liquid scintillator based.
In the poster, we first discuss the natural radioactivity event rate in the Gd-LS based Daya Bay anti-neutrino detector, which is studied with the cascade decays in the 238U, 232Th and 227Ac decay chains. The properties, such as half-life time of the cascade decays measured at Daya Bay are also shown. Event rate of 210Pb, which is from the decay of 222Rn in the air, is studied via spectrum fitting.
Then we discuss the 13C(α,n)16O background rate calculation, which is induced by the interaction between alpha from natural radioactivity and 13C in the liquid scintillator. Background spectrum is also calculated, and systematic uncertainty of rate and spectrum are estimated.

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Track Classification: Reactor Neutrino Oscillations