

Jiangmen Underground Neutrino Observatory (JUNO)

Underground Muon Flux

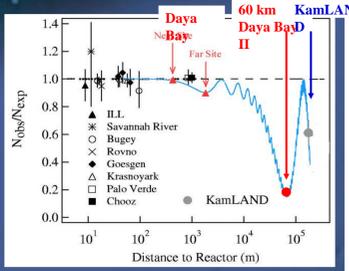
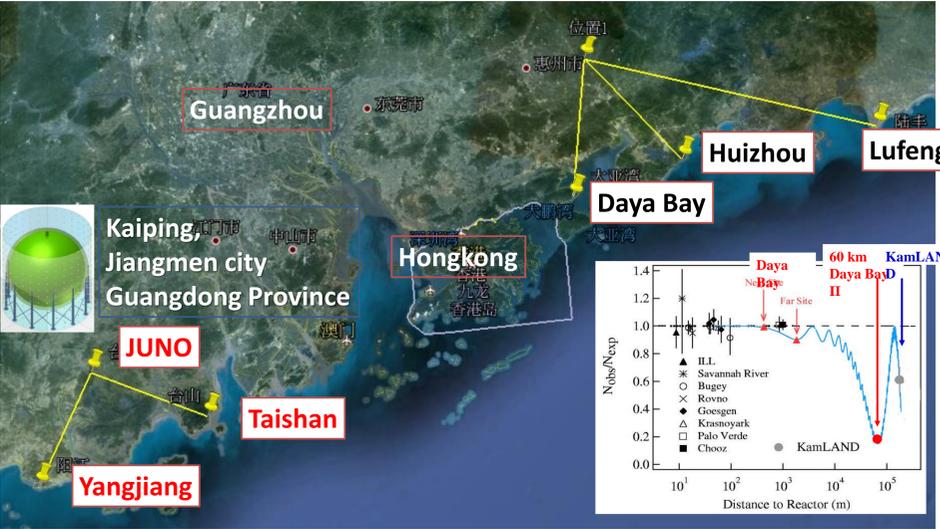
Xiaonan Li, IHEP, Beijing
on behalf of the JUNO Proto-Collaboration

Jiangmen Underground Neutrino Observatory (JUNO), with 53 km baseline, over 700 meters overburden, will aim at measurement of neutrino mass hierarchy as well as many other physical goals. Site geological investigation and survey shown that the mountain, the experimental hall is underneath, is consist of granite, which is best for the construction and stability of underground hall spanning than 50 meters. Upon geological results, the civil design is finalized. The project was already approved by China government.

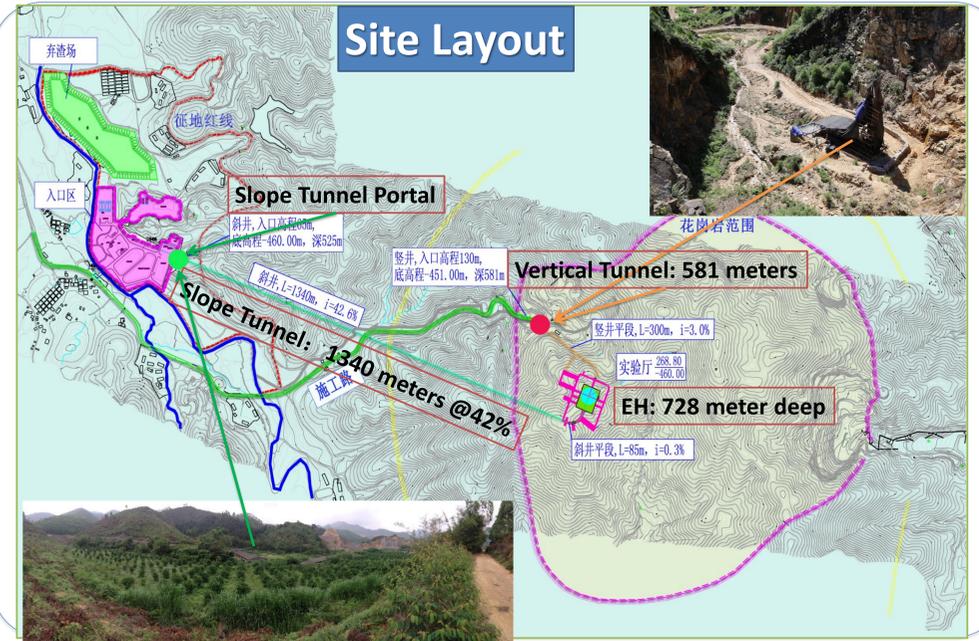
Based on the geological profile measurement and MUSIC, developed for Muon simulation for Daya Bay Reactor Neutrino Experiment, the Muon rate is estimated about $0.003\text{Hz}/\text{m}^2$. The backgrounds of $9\text{Li}/8\text{He}$ and rock neutron can be controlled less than $B/S \sim 0.7\%$ and $B/S \sim 0.3\%$ respectively.

Site Location

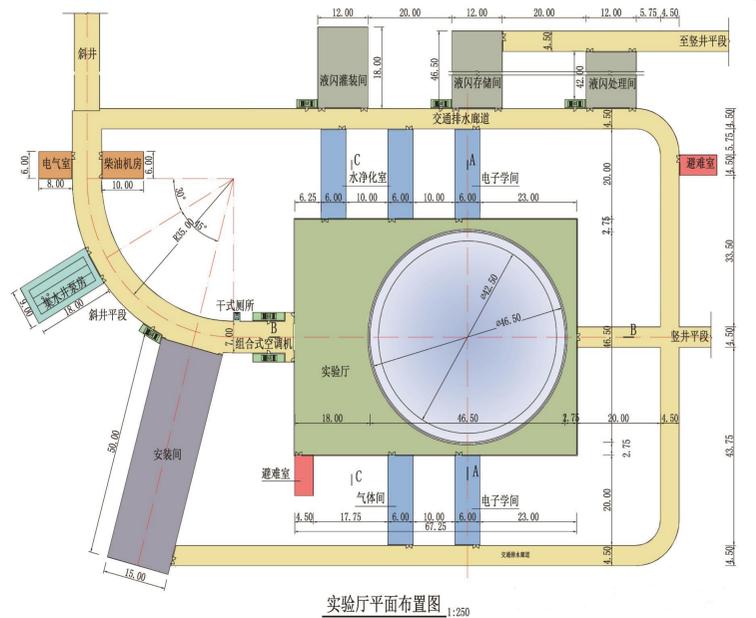
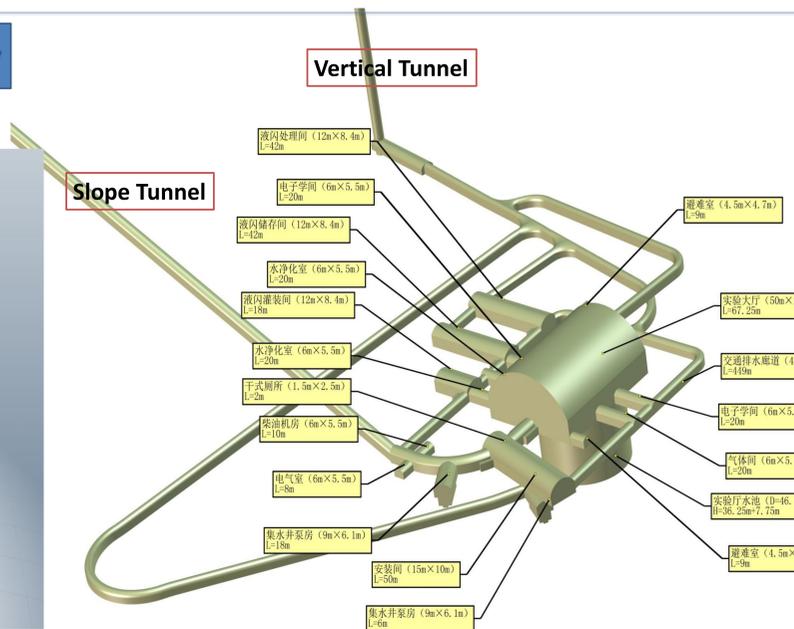
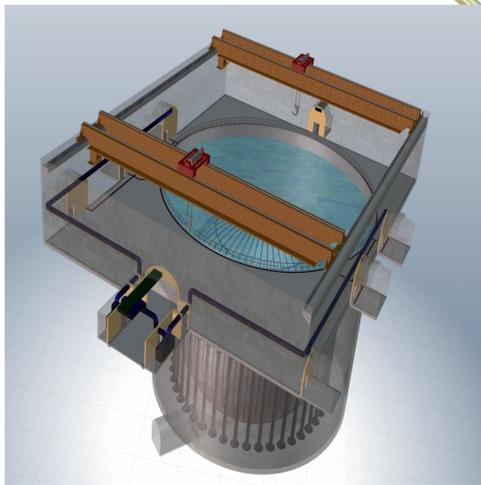
NPP	Daya Bay	Huizhou	Lufeng	Yangjiang	Taishan
Status	Operation	Plan	Plan	Construction	Construction
Power/GW	17.4	17.4	17.4	17.4	18.4



Site Layout

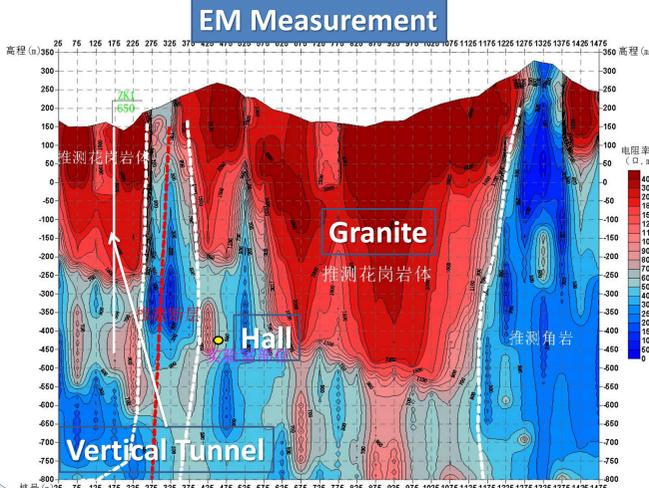


Underground Facility

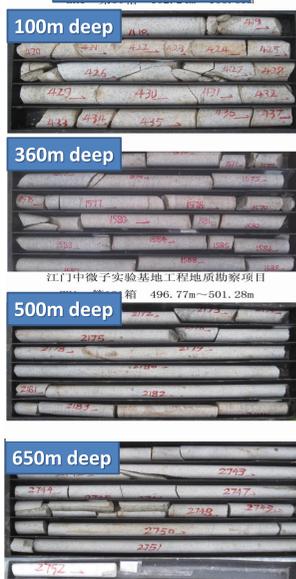


Geological Survey

附图11 广东省江门市中微子实验基地XKWT1剖面CSAMT法成果剖面图



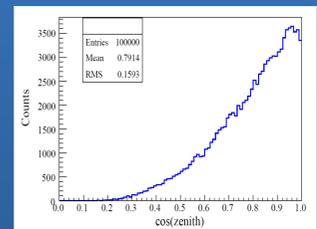
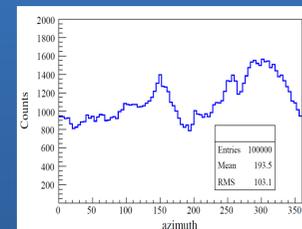
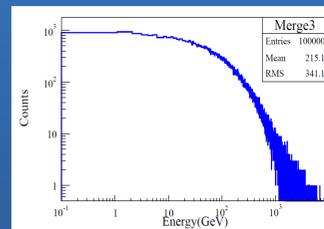
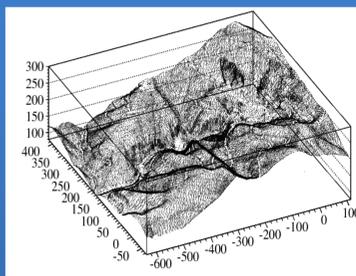
Rock Samples



JUNO Muon Flux Prediction

Based on Daya Bay experiment experience, muon flux in JUNO neutrino experiment underground site was simulated. The Overburden in JUNO is $\sim 720\text{m}$ rock.

- Muon rate: $0.0030\text{Hz}/\text{m}^2$.
- Average energy: $\sim 215\text{GeV}$.



References:
Lang Zhan, JUNO: A Next Generation Reactor Antineutrino Experiment, Session: Neutrino Physics

