How would moving the far site impact the sensitivity?

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Simulation/Analysis Meeting
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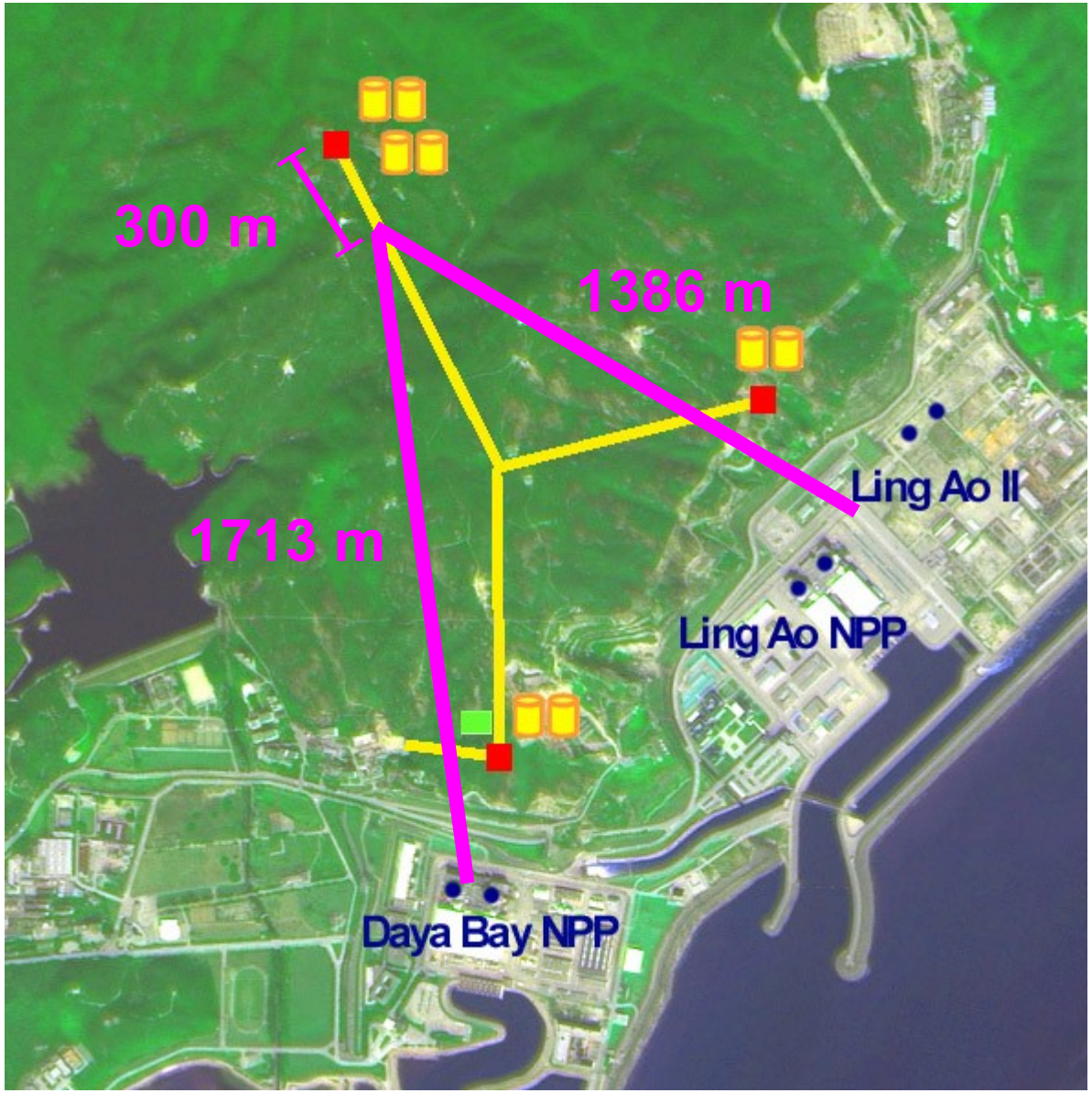
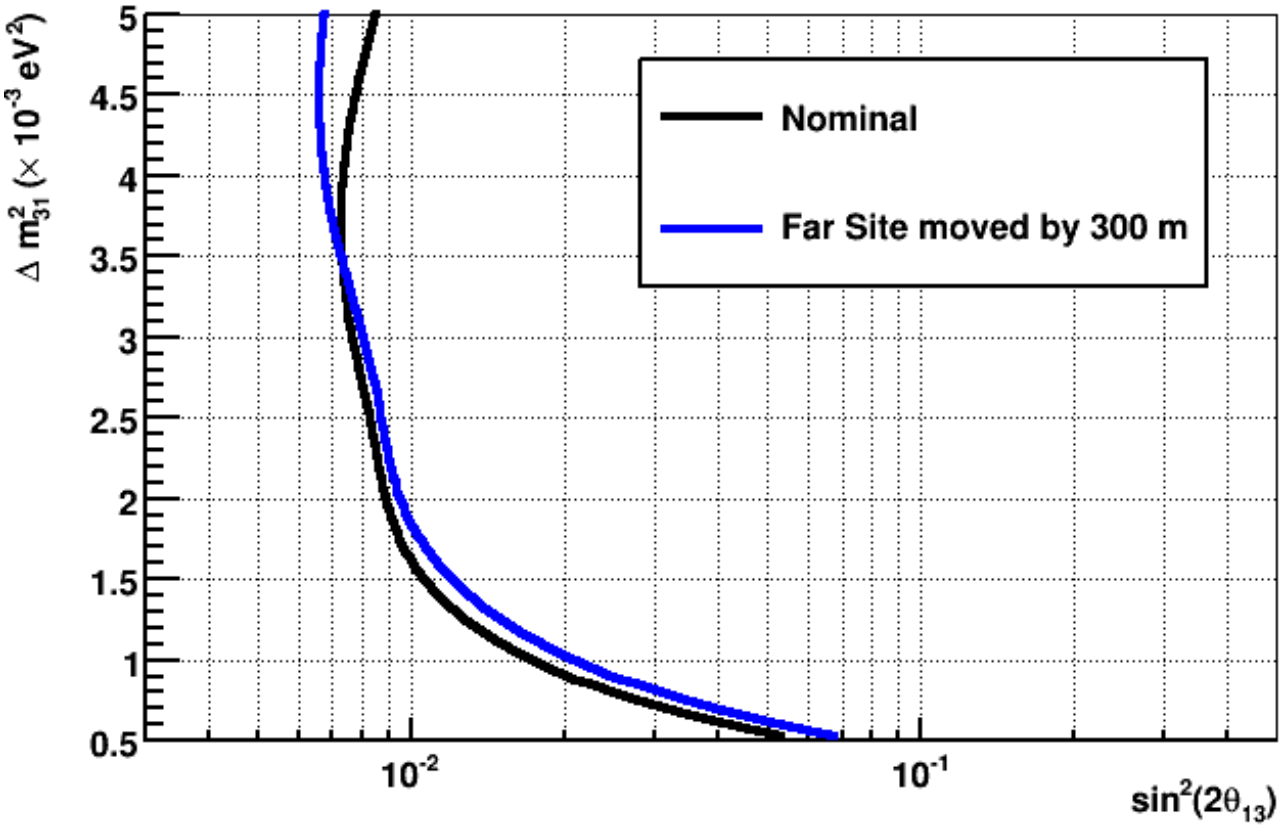
Moving the far site



What if the far site were built 300 m from the originally planned location?

I looked at the sensitivity with baselines of 1713 m from Daya Bay and 1386 m from Ling Ao (not precisely calculated)

Sensitivity



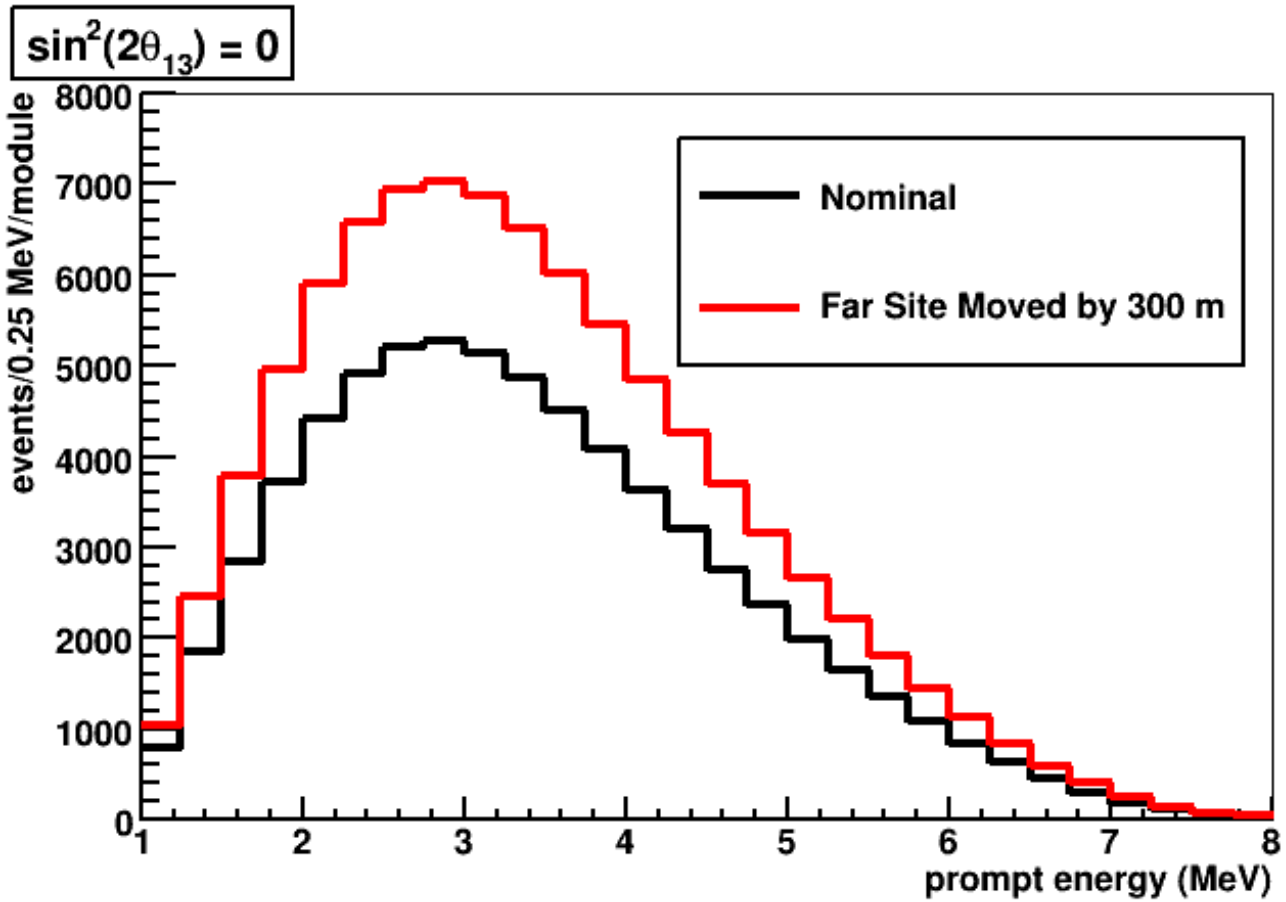
90% C.L. sensitivity at $\Delta m^2 = 2.5\text{x}10^{-3}$ eV^2 changes by ~5% (0.0083 → 0.0087)

Calculated with my sensitivity code using the 'standard' inputs (doc-2546)

Rate and Spectrum

Nominal rate: 91 interactions/day/module
With the far site moved: 123 interactions/day/module (35% increase)

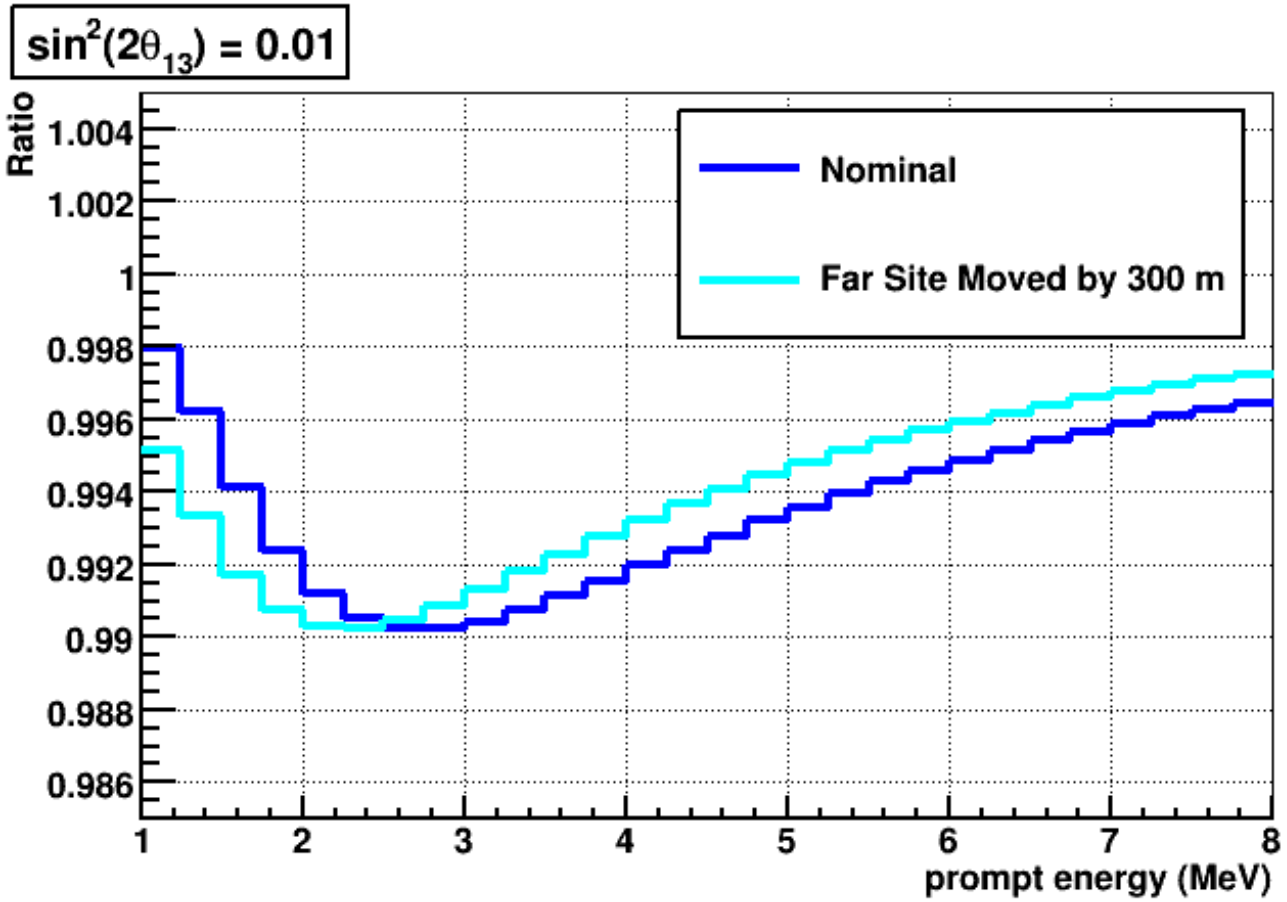
Prompt spectrum for one module (assuming no oscillation)



Rate and Spectrum

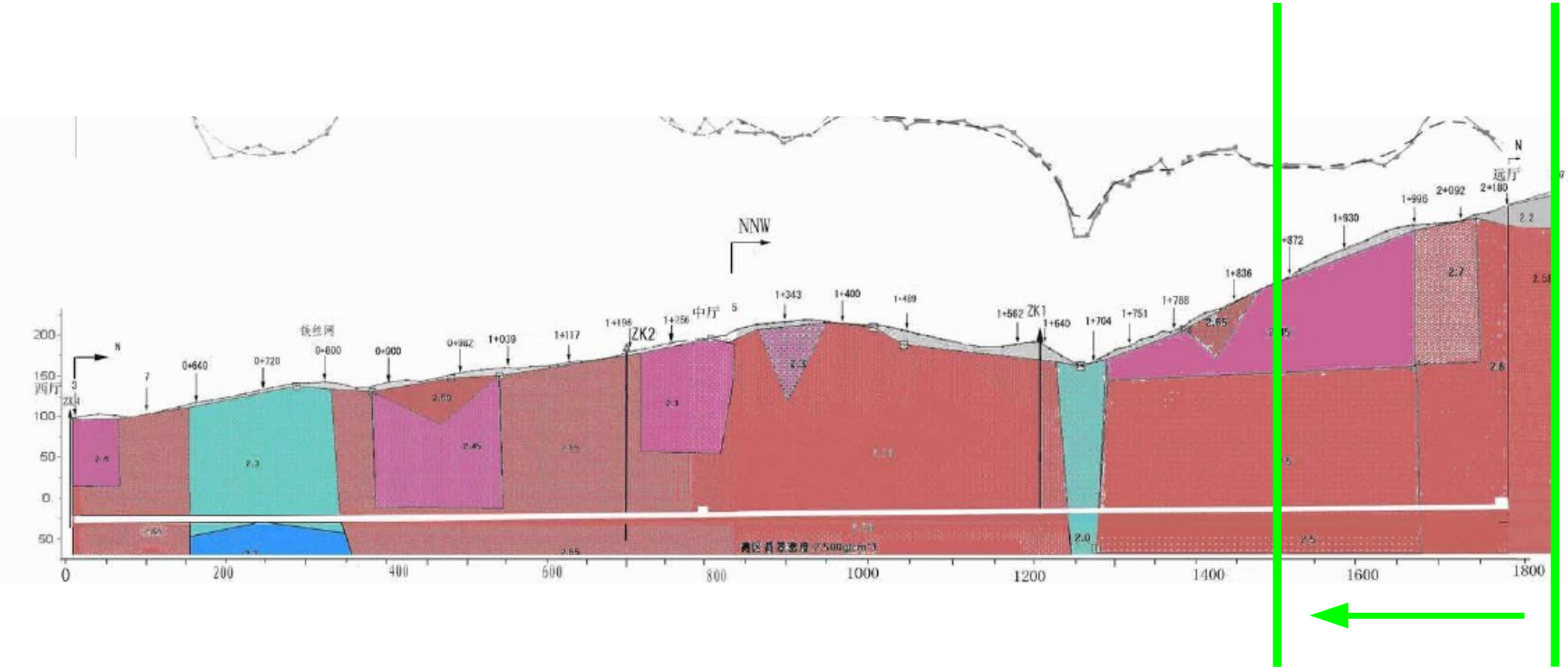
Rate-only sensitivity decreases from 0.0114 to 0.0117 (3%)

Ratio of oscillated spectrum to spectrum with no oscillation



Changing the baseline shifts the location of the dip by -0.5 MeV

I only considered the effect of changing the baseline and assumed the background rate would be the same. In fact the overburden is ~100 m less if the site is moved by 300 m.



Profile along the tunnel from Daya Bay site to far site