

Matter Density Profile Effects On Neutrino Oscillations At T₂HK And T₂HKK

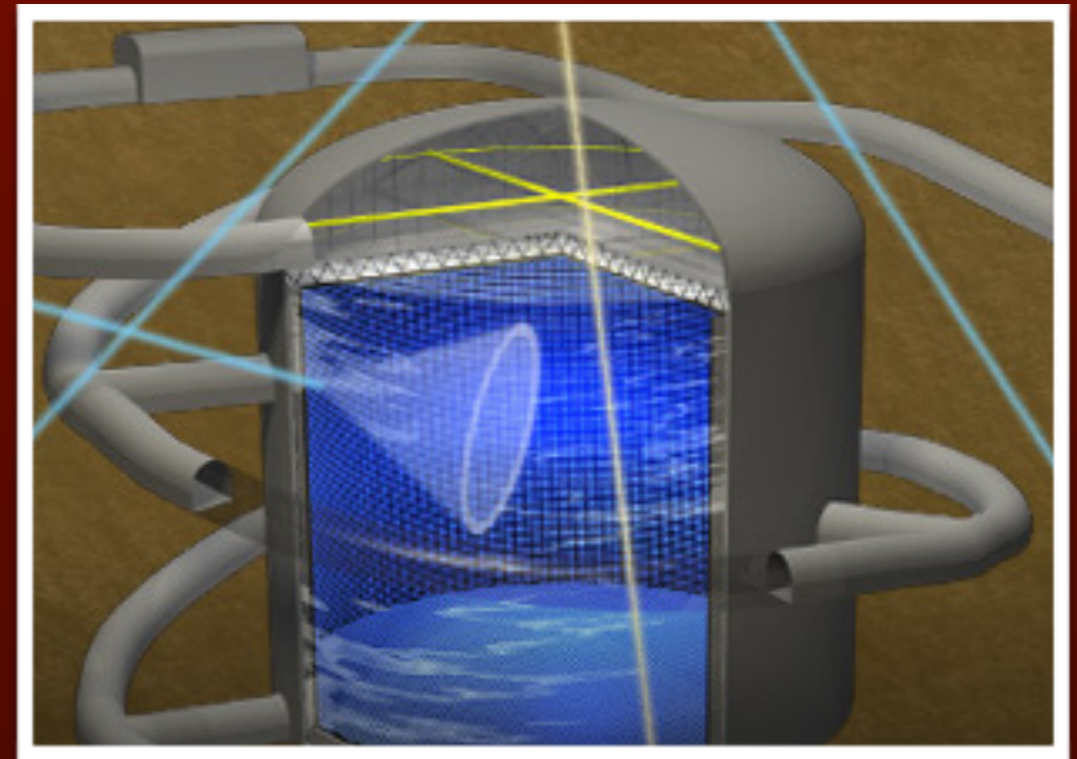
IOF HEPP / APP
CONFERENCE

Susana Molina Sedgwick

*In collaboration with
S. King, S. Parke, N. Prouse*

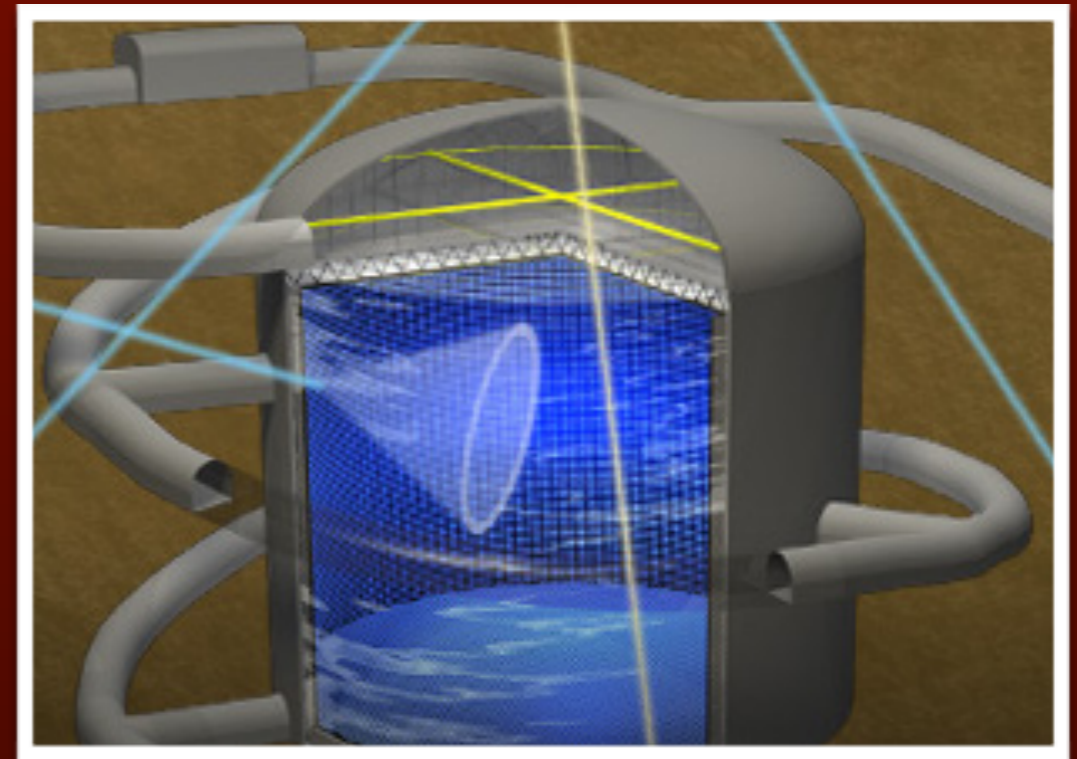
HYPER KAMIOKANDE

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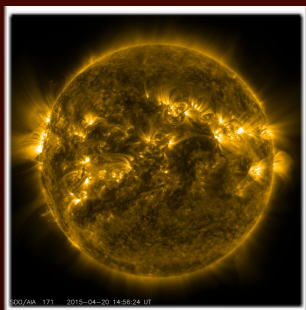
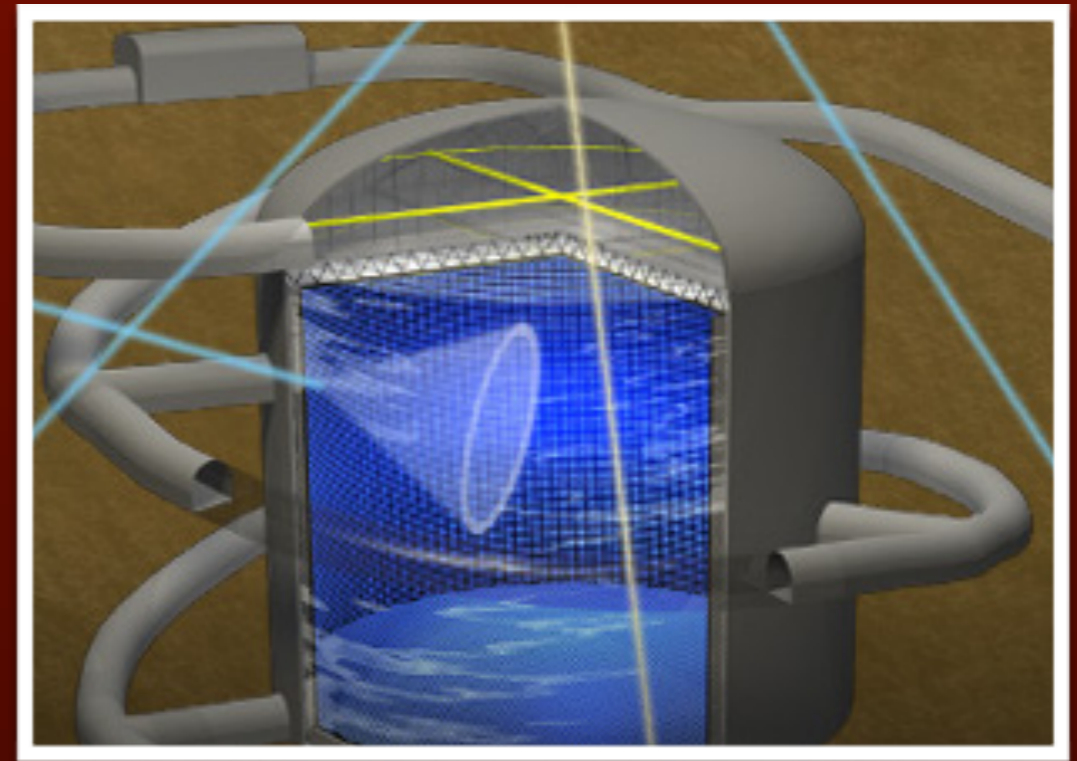
HYPER KAMIOKANDE

- 10x larger than Super-K
- Upgraded near + intermediate detector
- Multipurpose: huge research potential



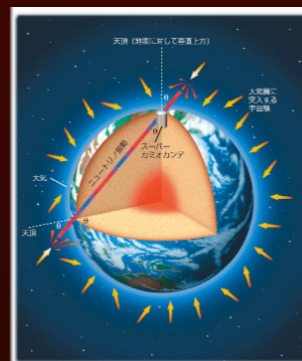
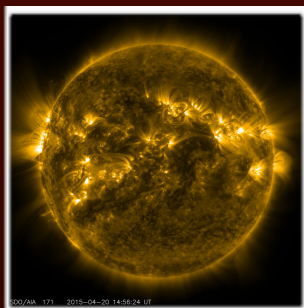
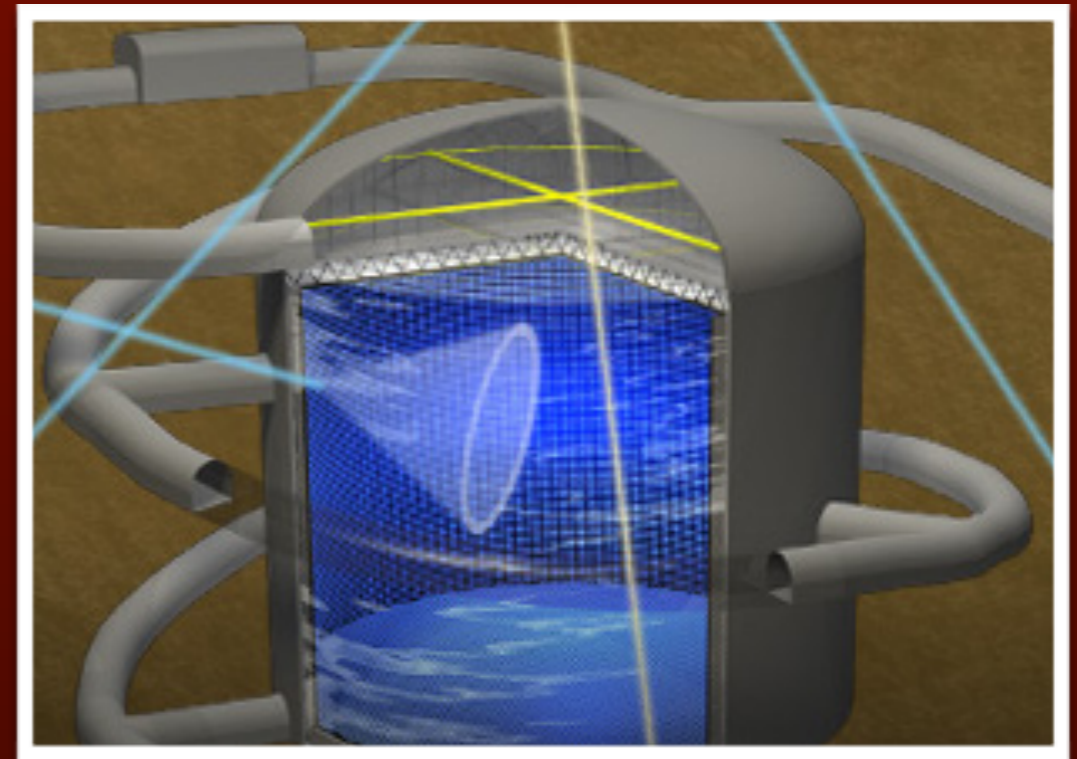
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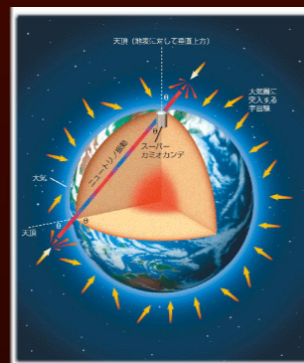
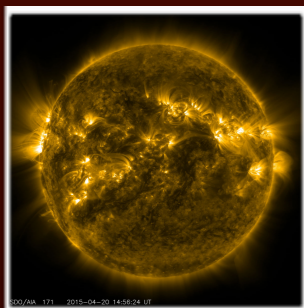
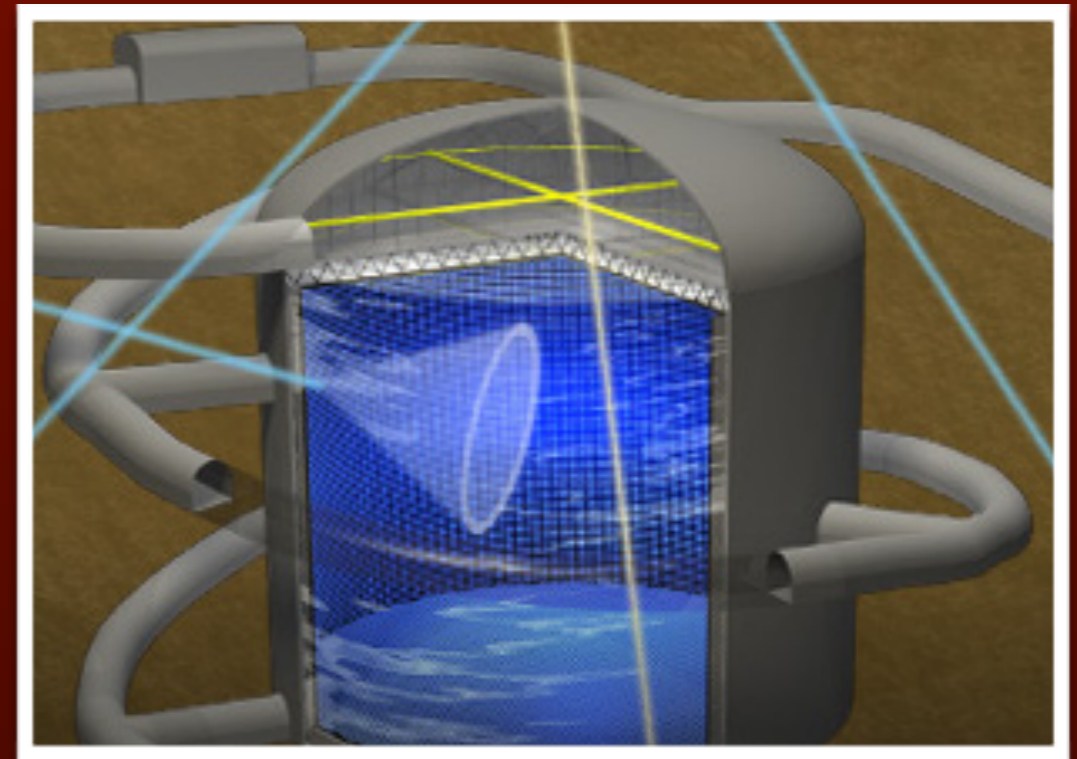
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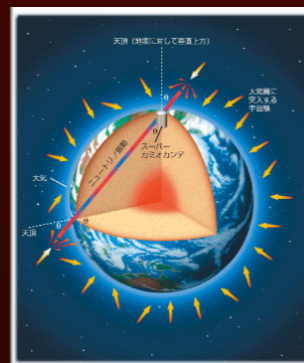
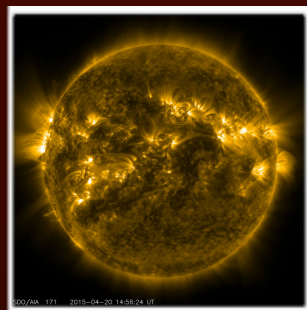
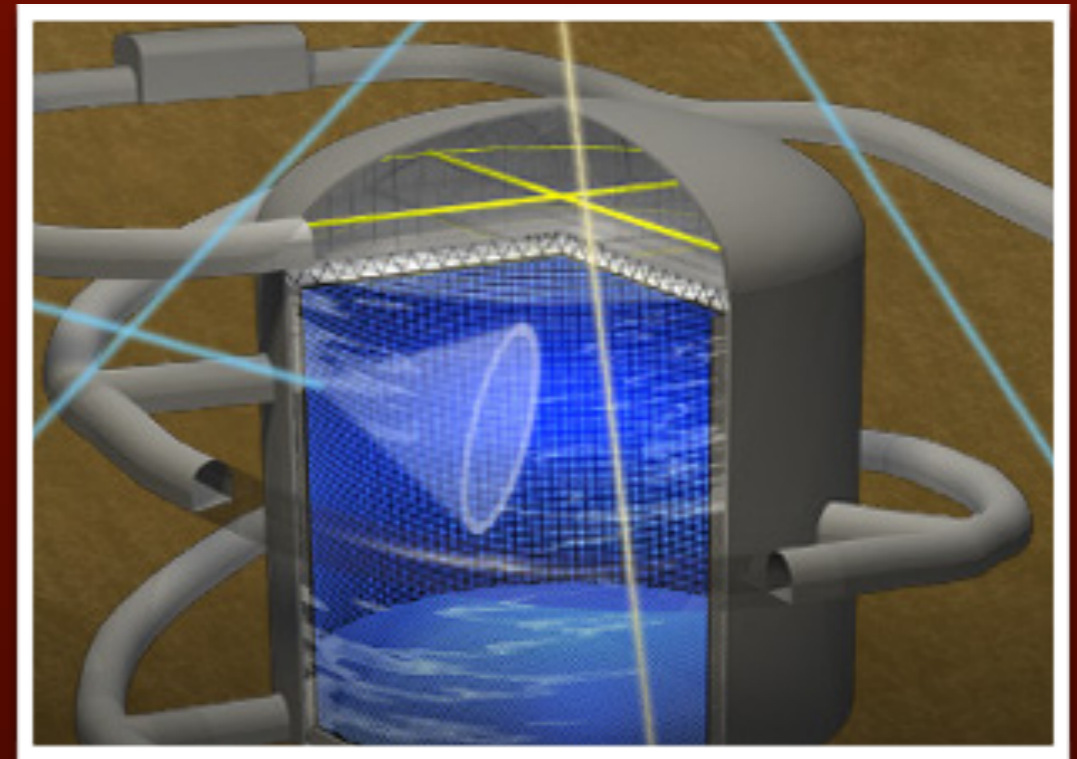
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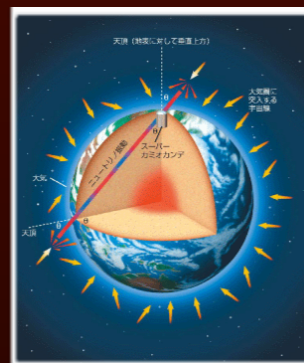
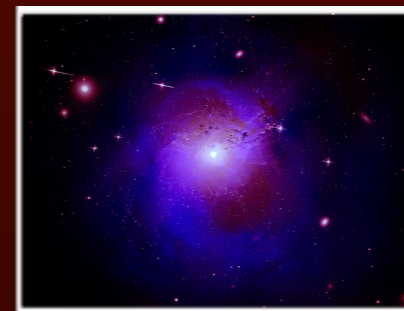
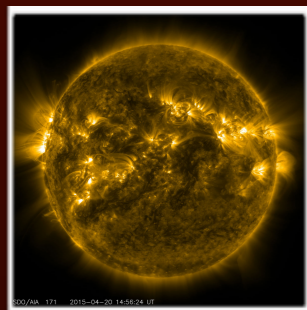
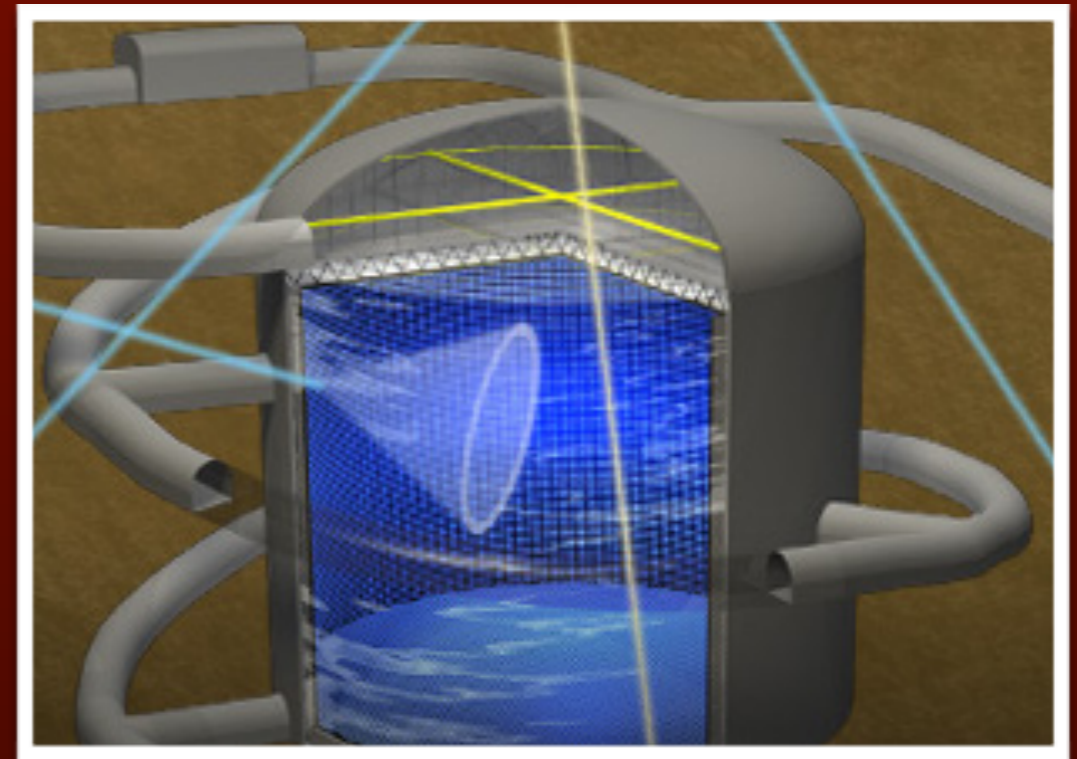
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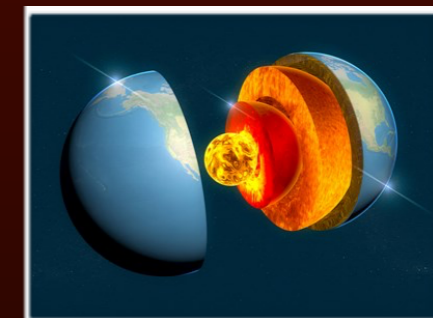
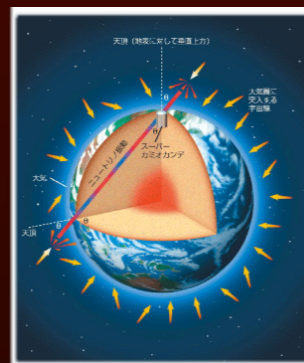
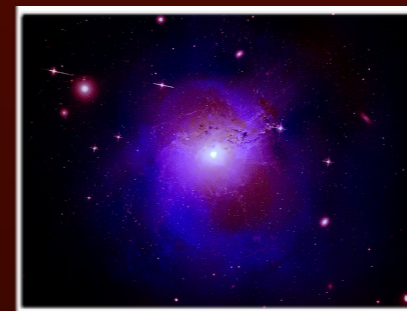
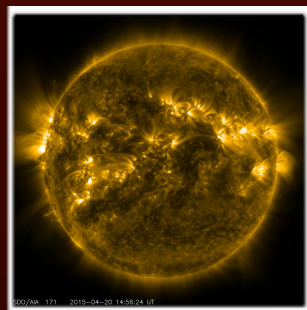
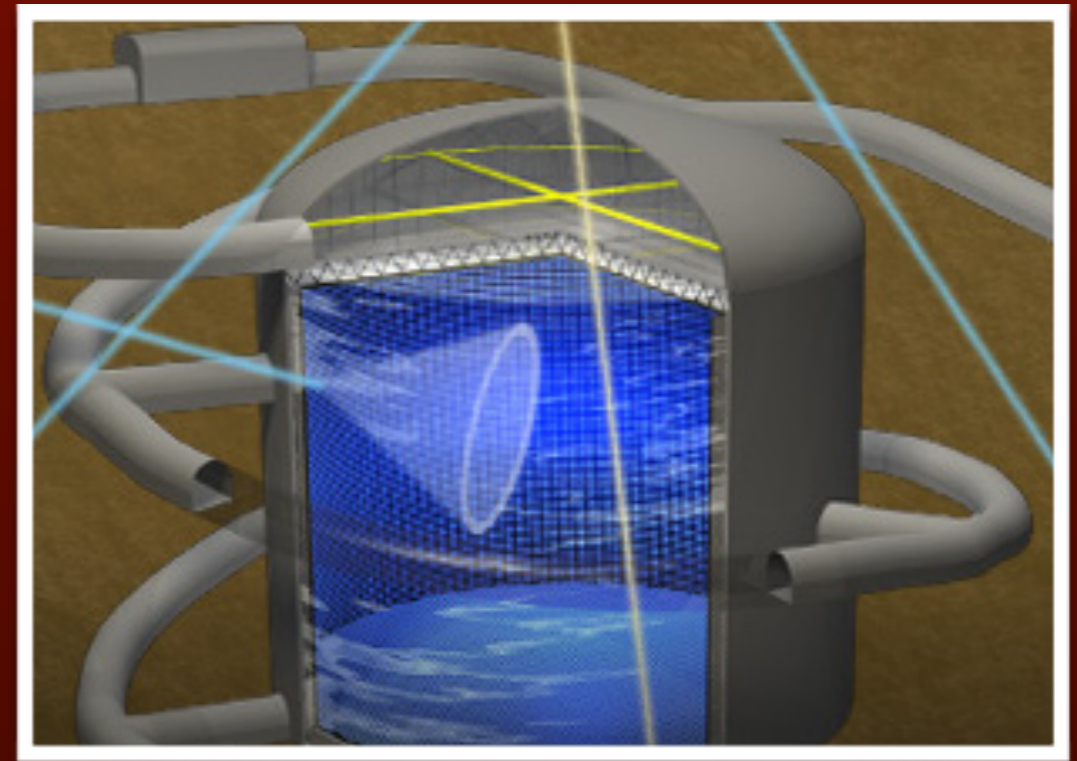
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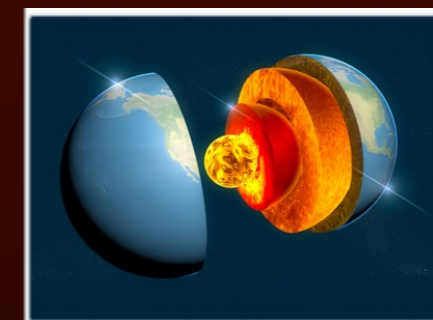
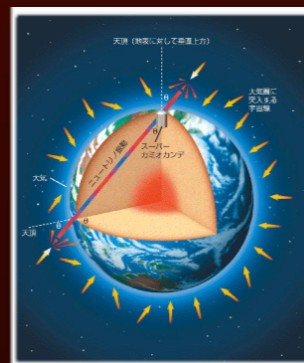
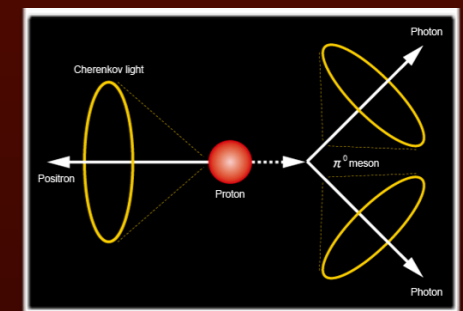
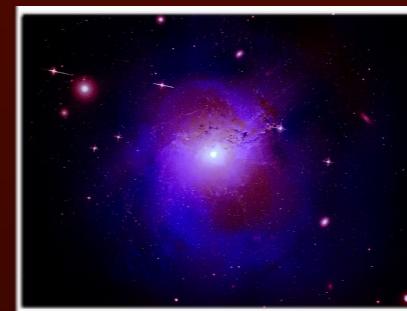
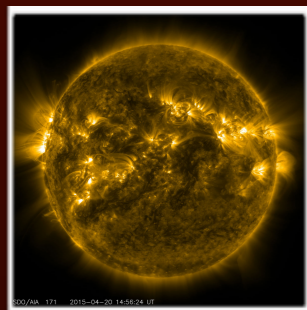
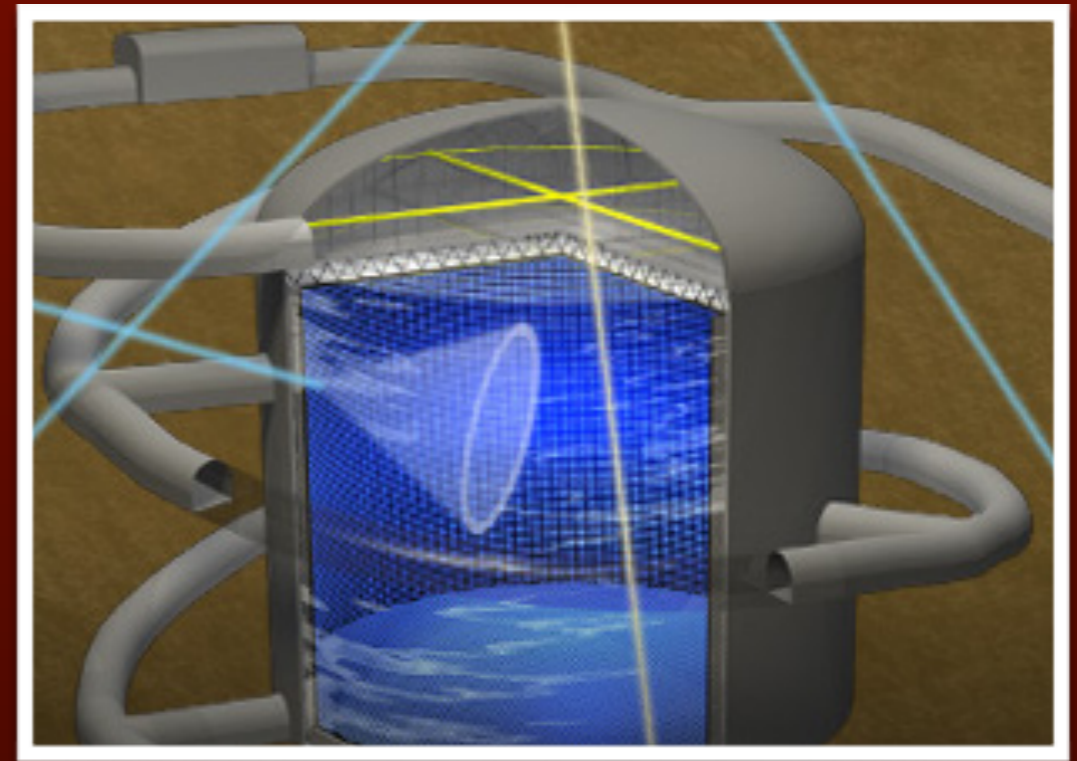
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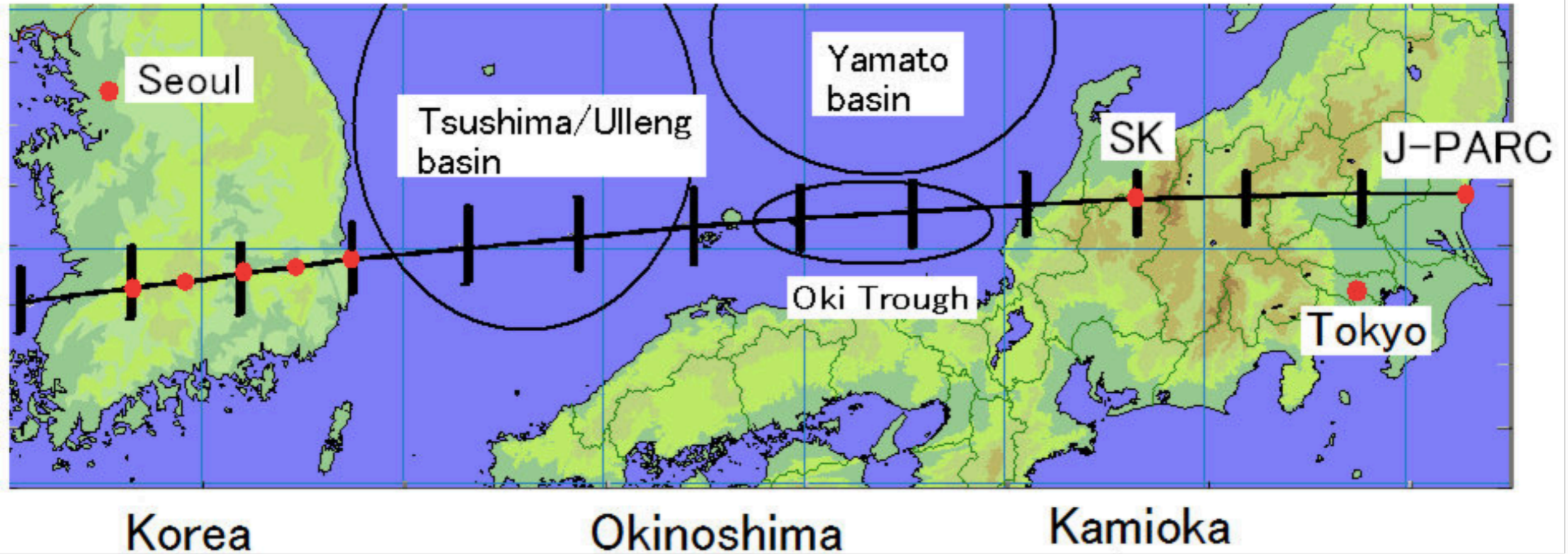
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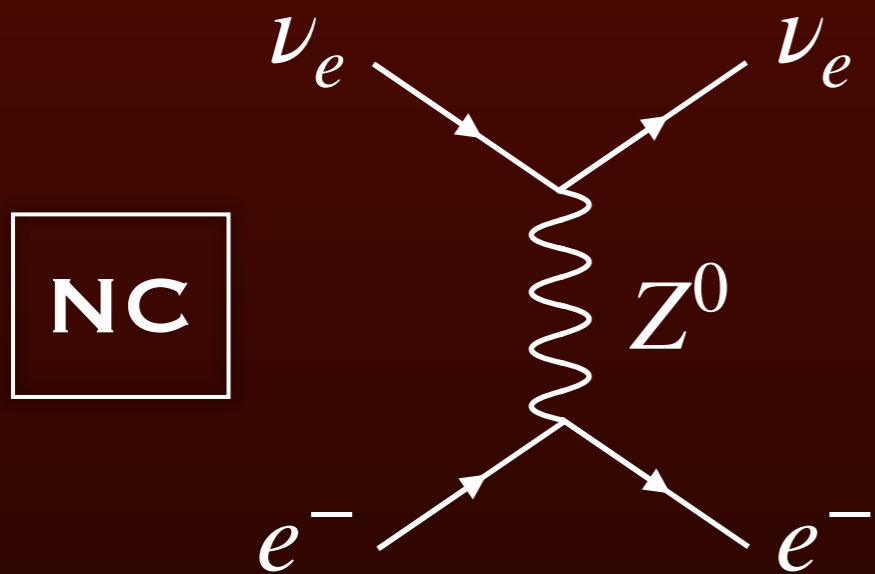
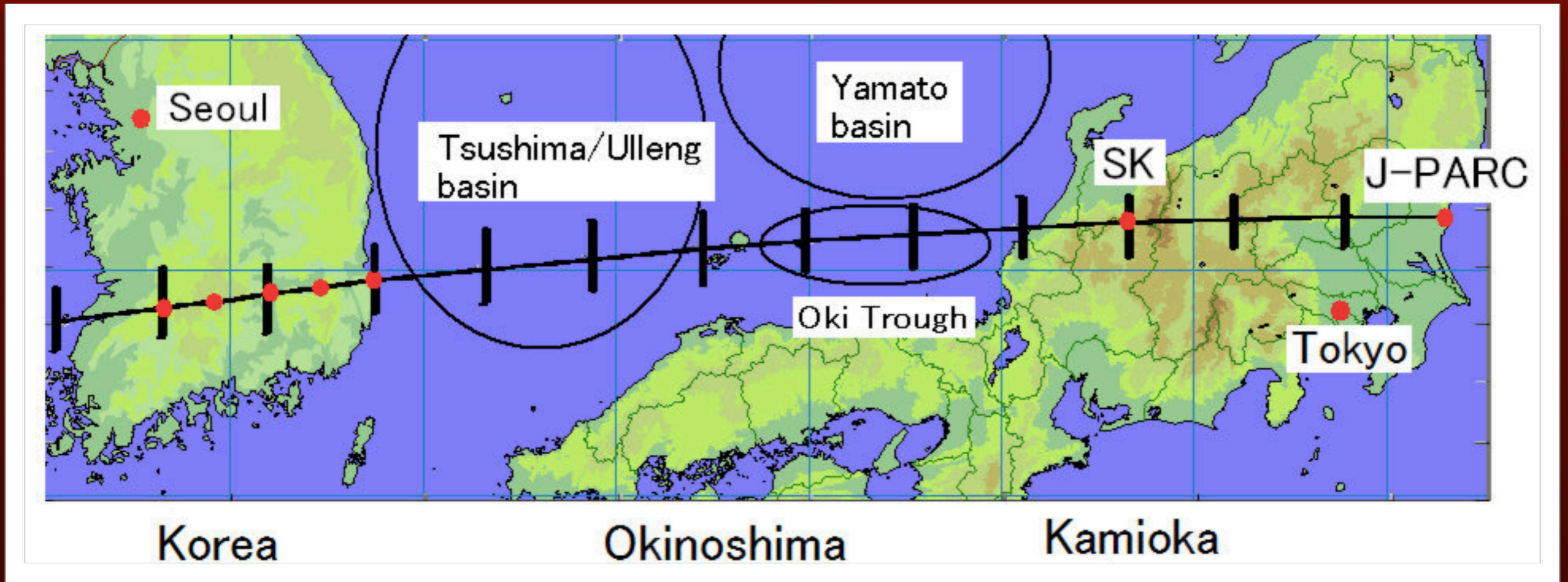


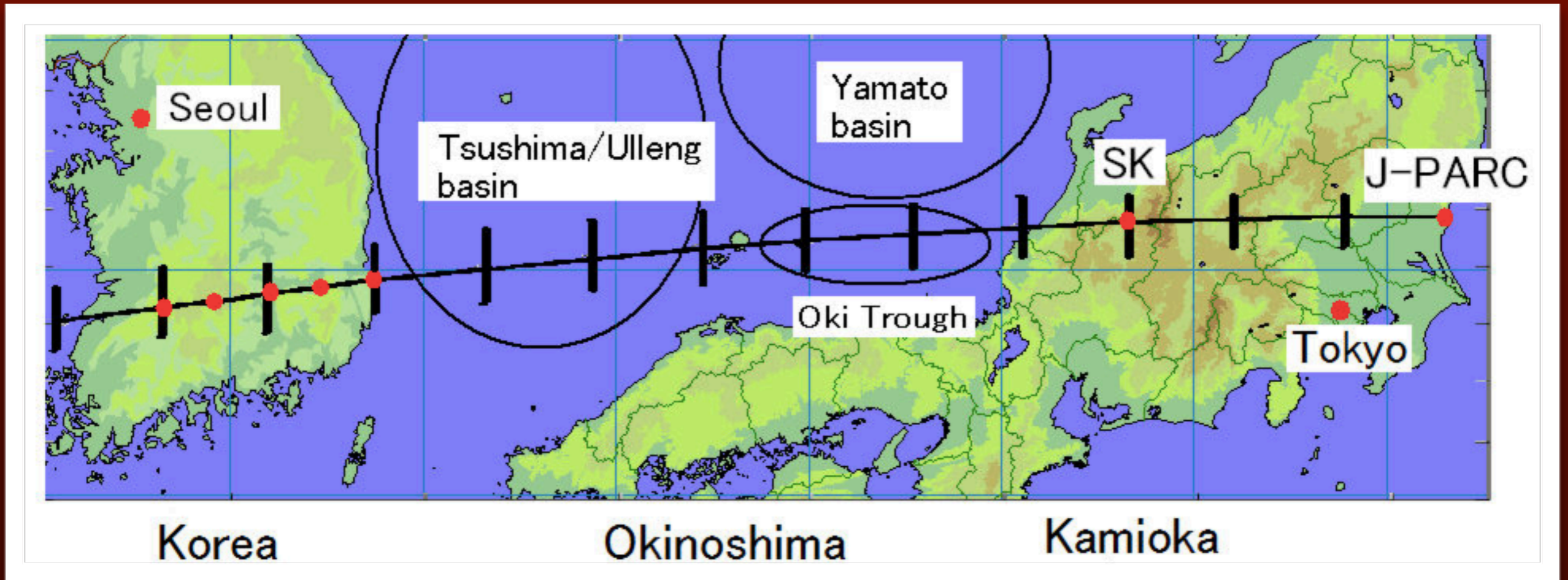
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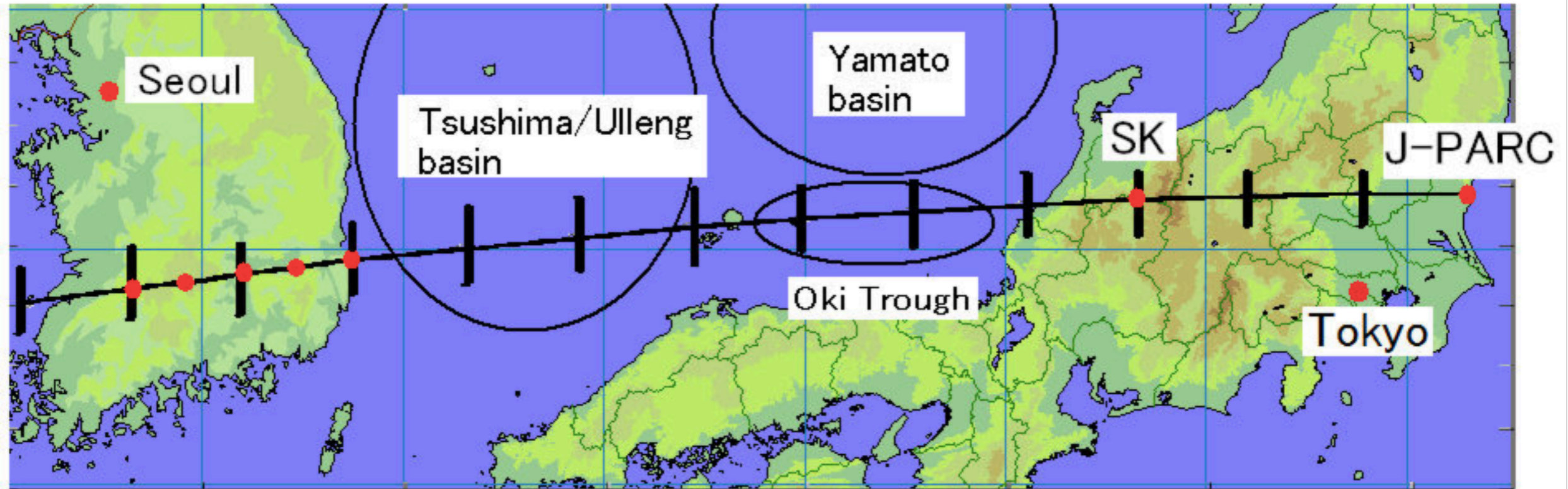
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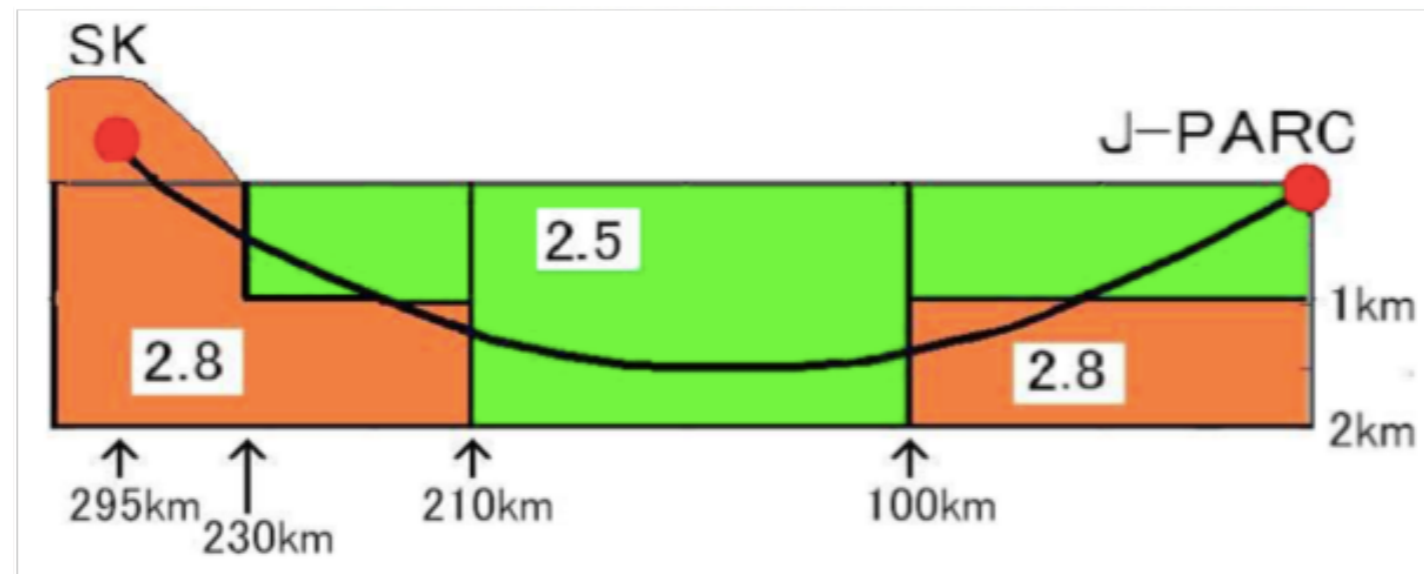


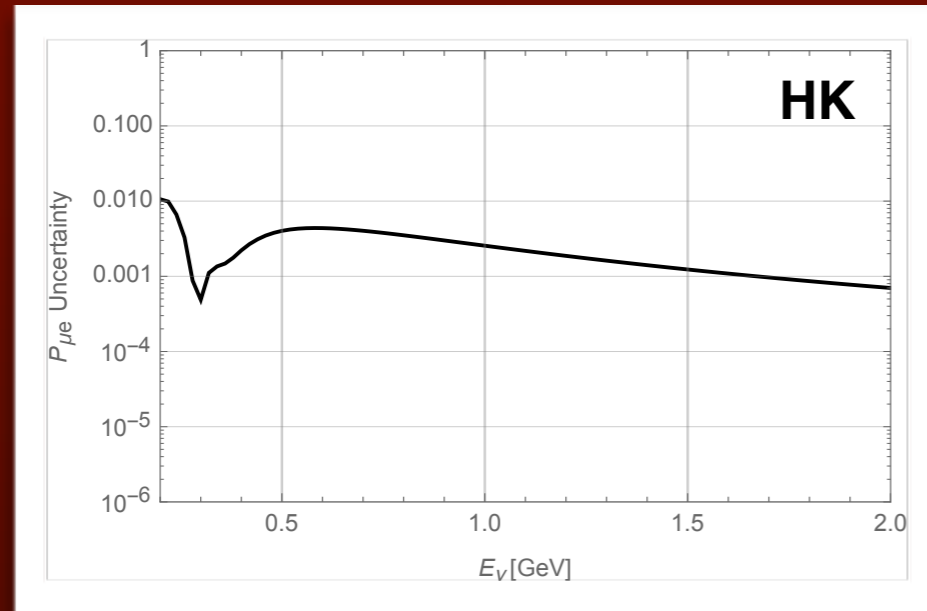


Korea

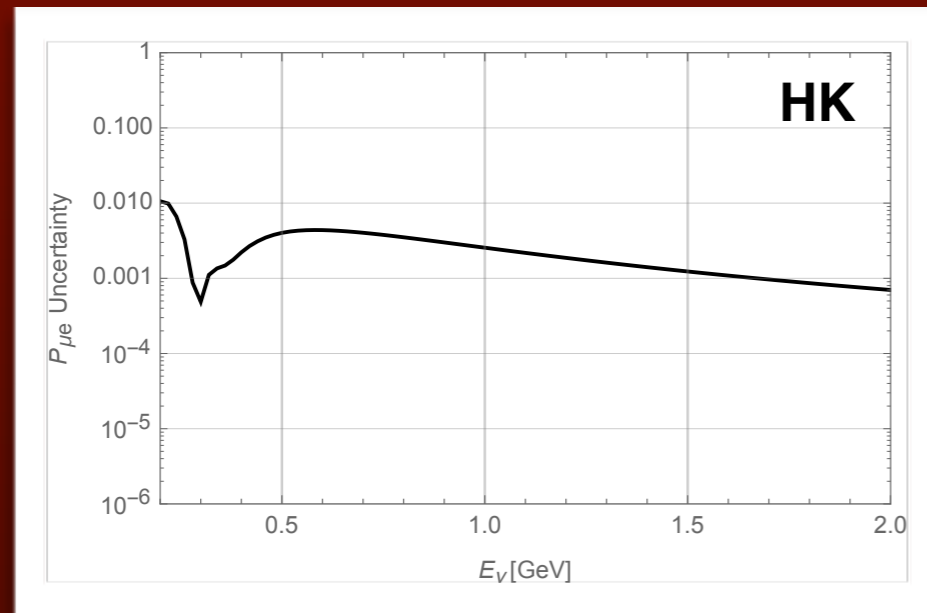
Okinoshima

Kamioka

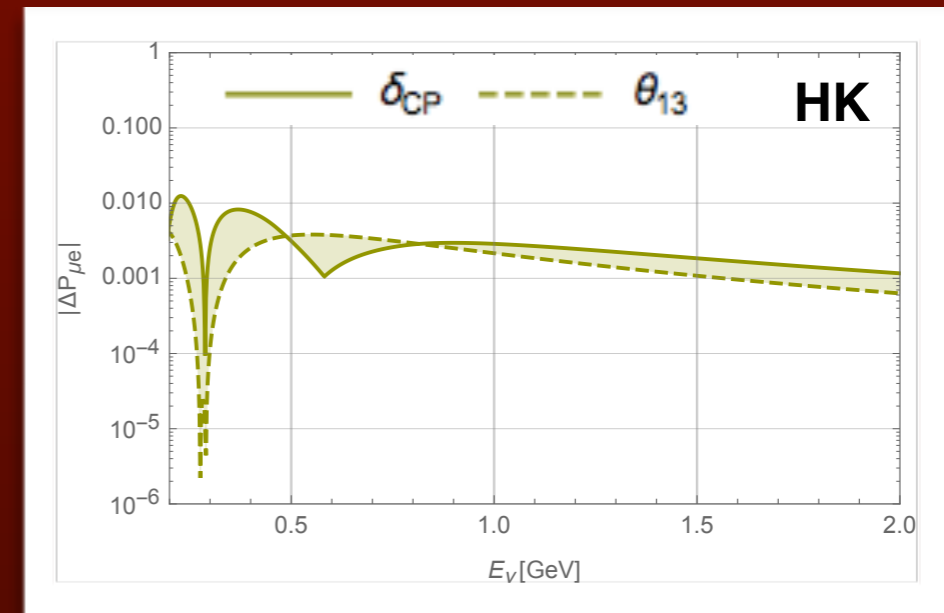




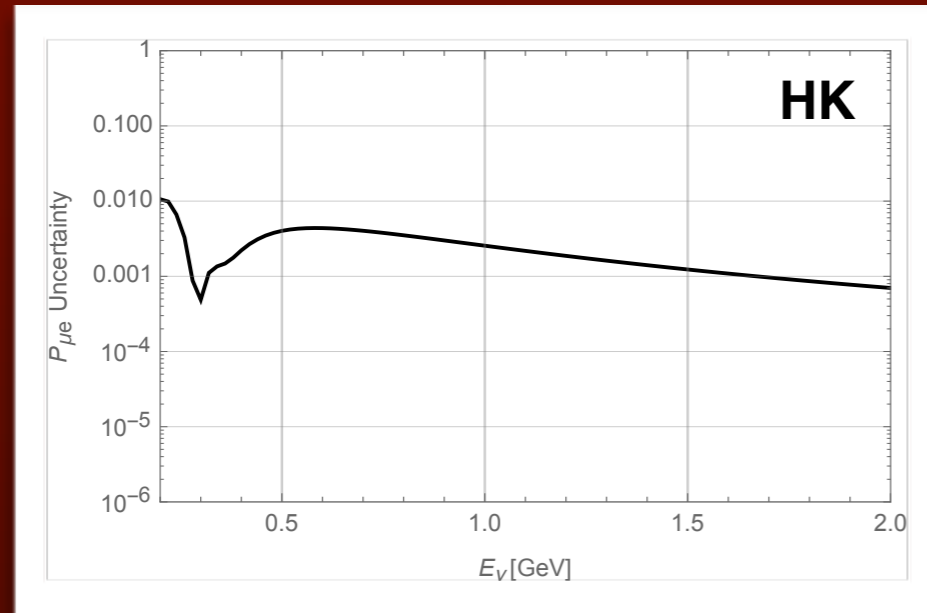
Sensitivity estimate



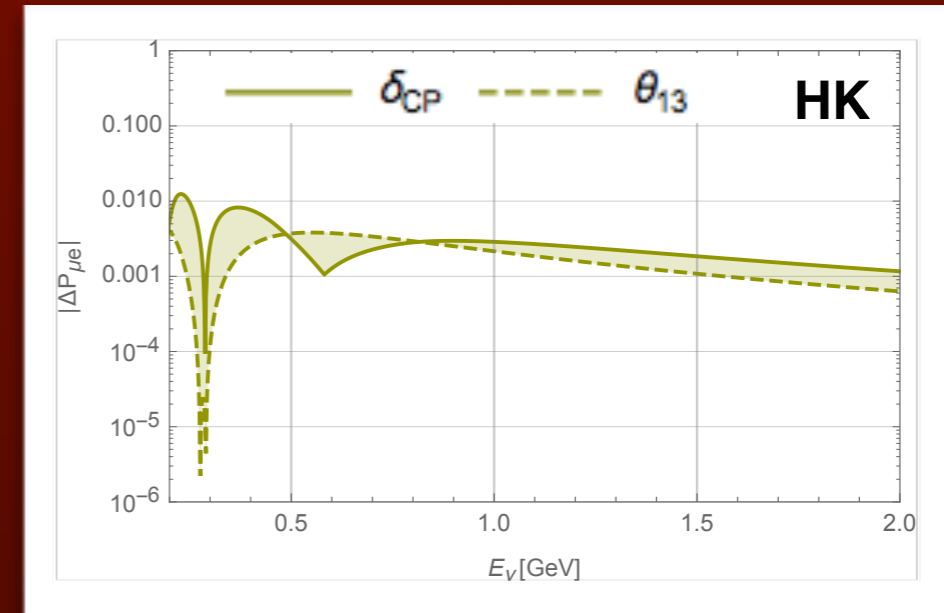
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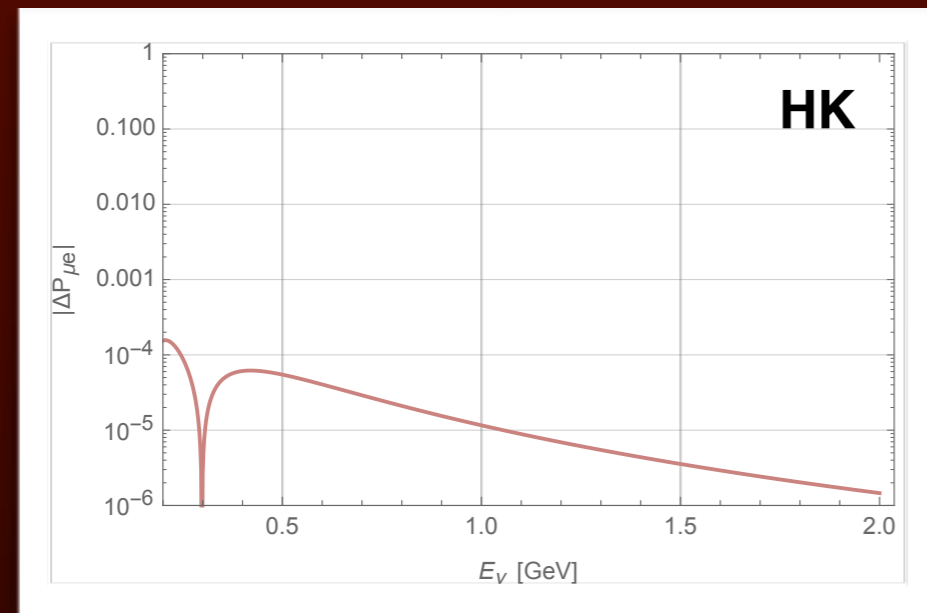
Parameter variation



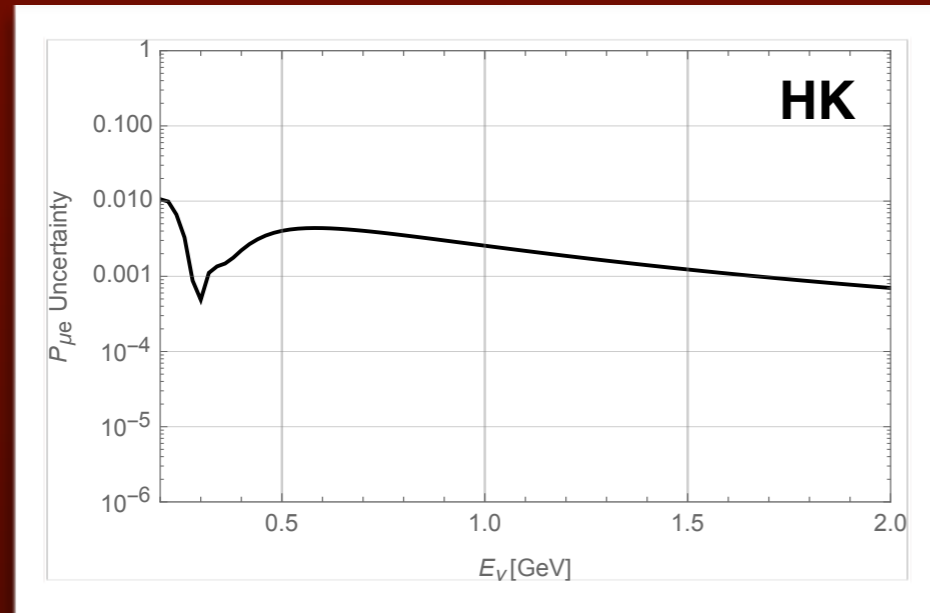
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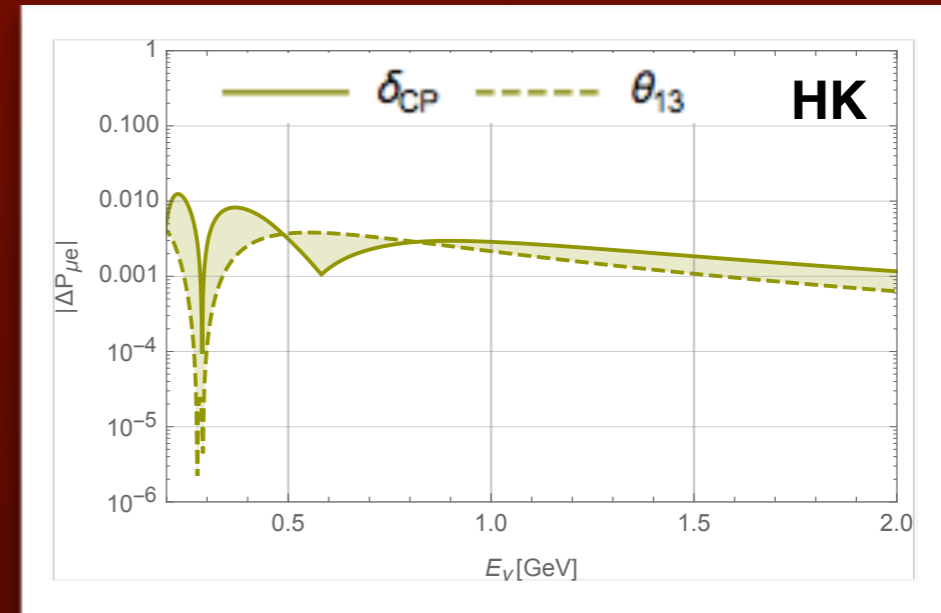
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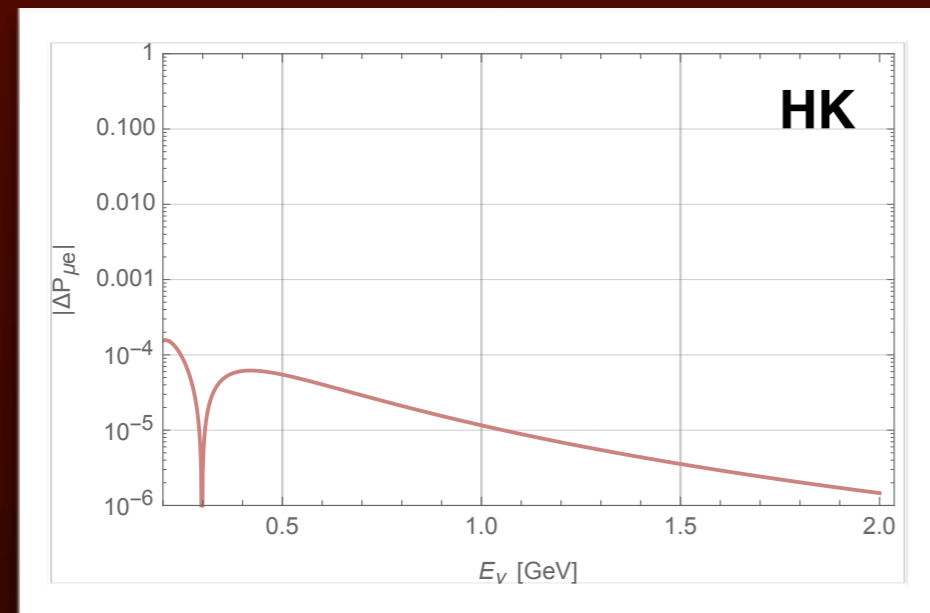
Density profile variation



Sensitivity estimate



Parameter variation



Density profile variation



But the interesting results
are for Hyper-K Korea!

HYPER-K KOREA

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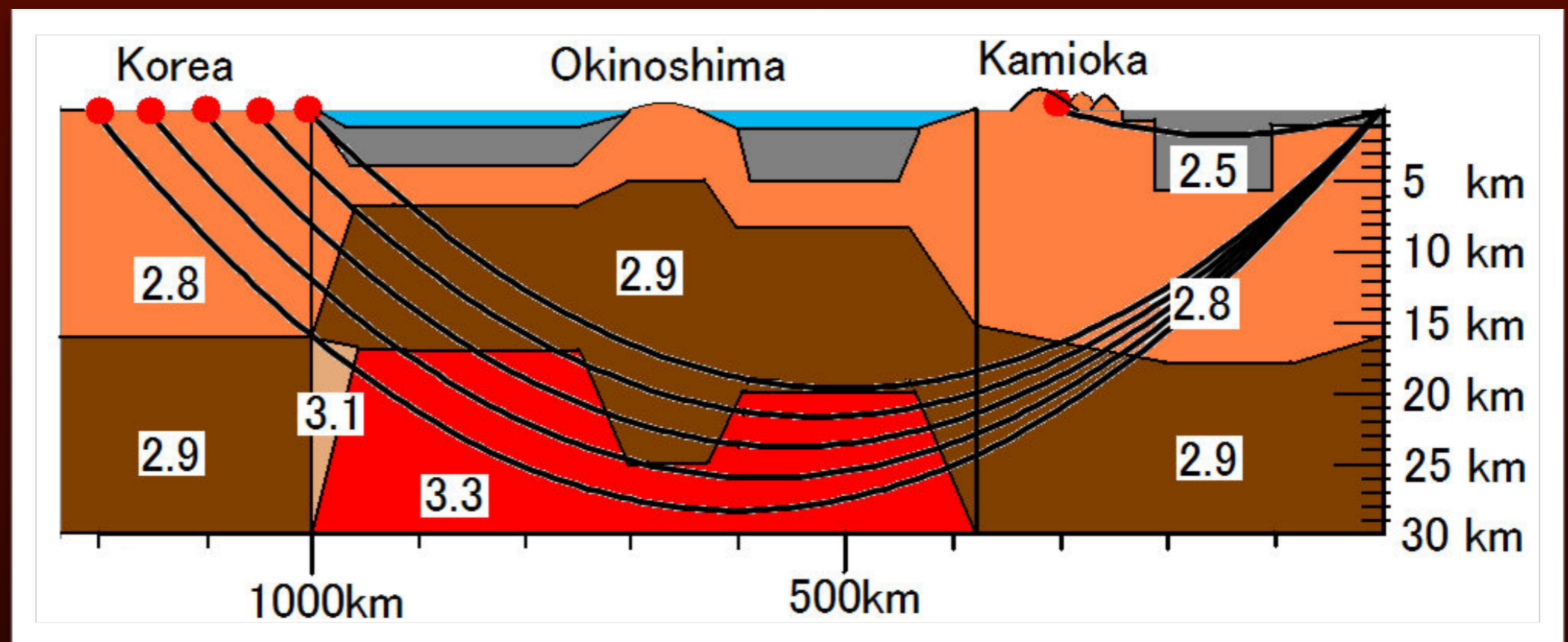
5 baselines

1000 km
1050 km
1100 km
1150 km
1200 km

HYPER-K KOREA

5 baselines

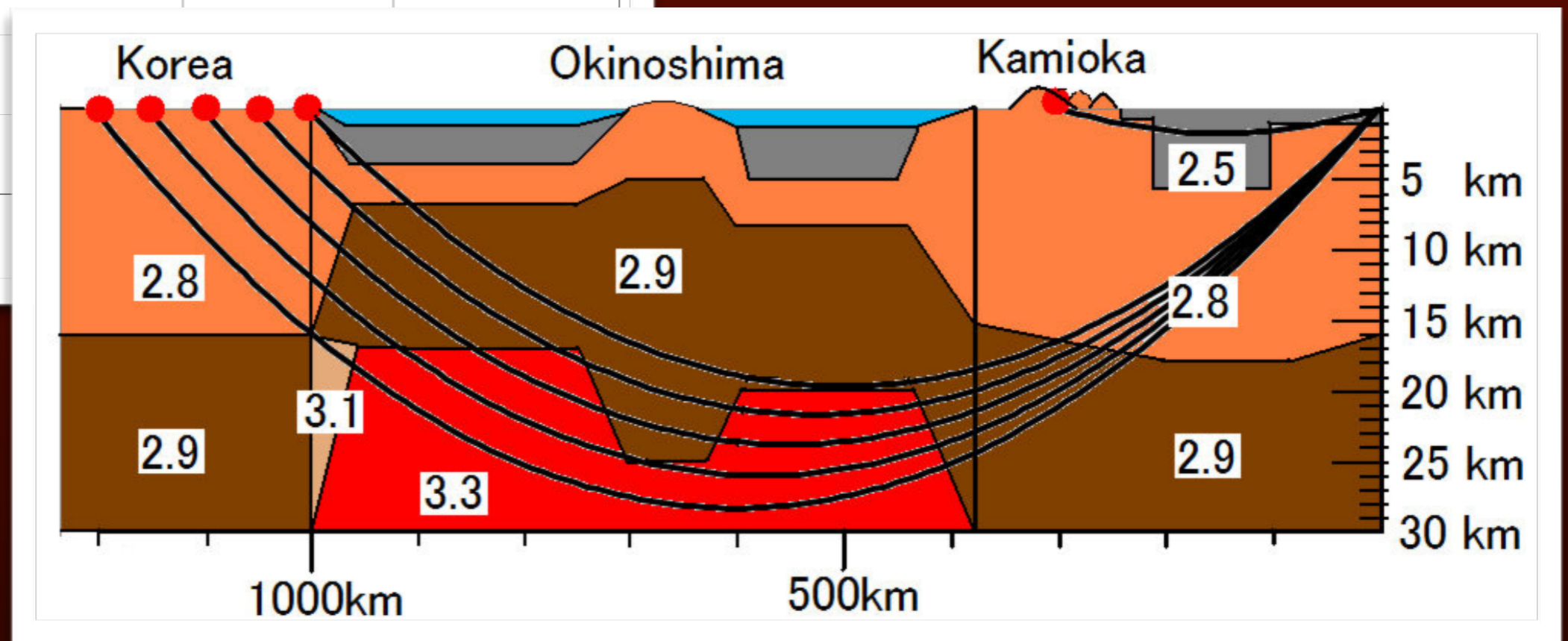
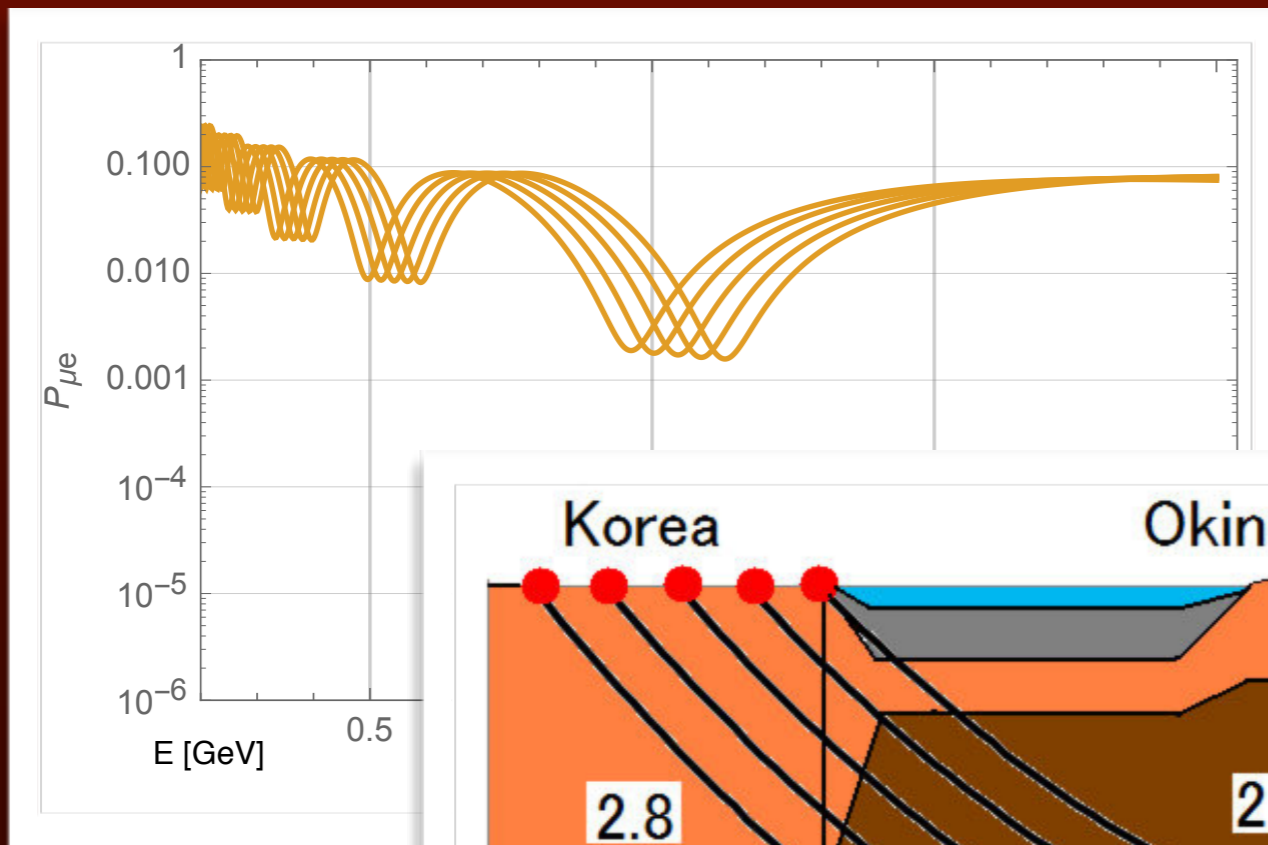
- 1000 km
- 1050 km
- 1100 km
- 1150 km
- 1200 km

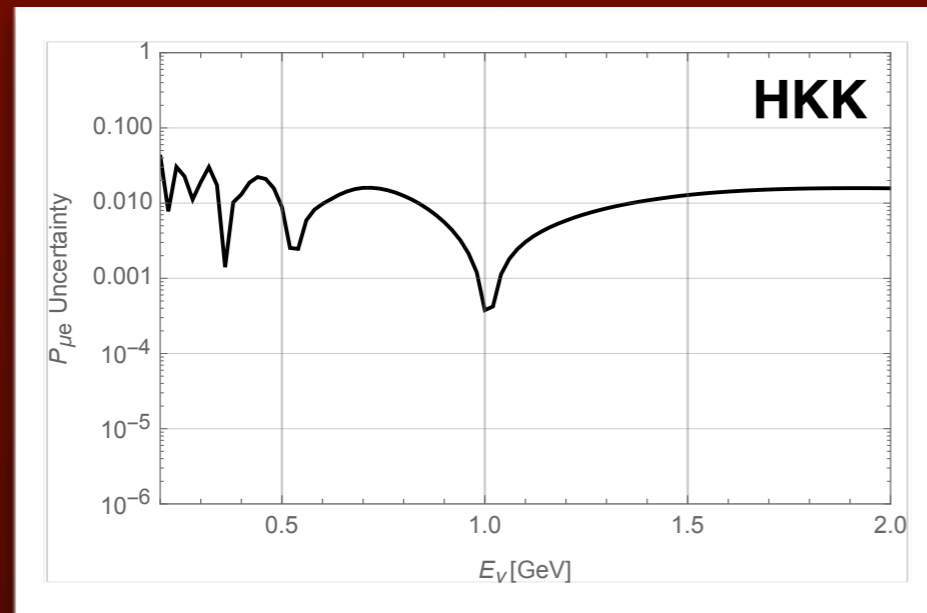


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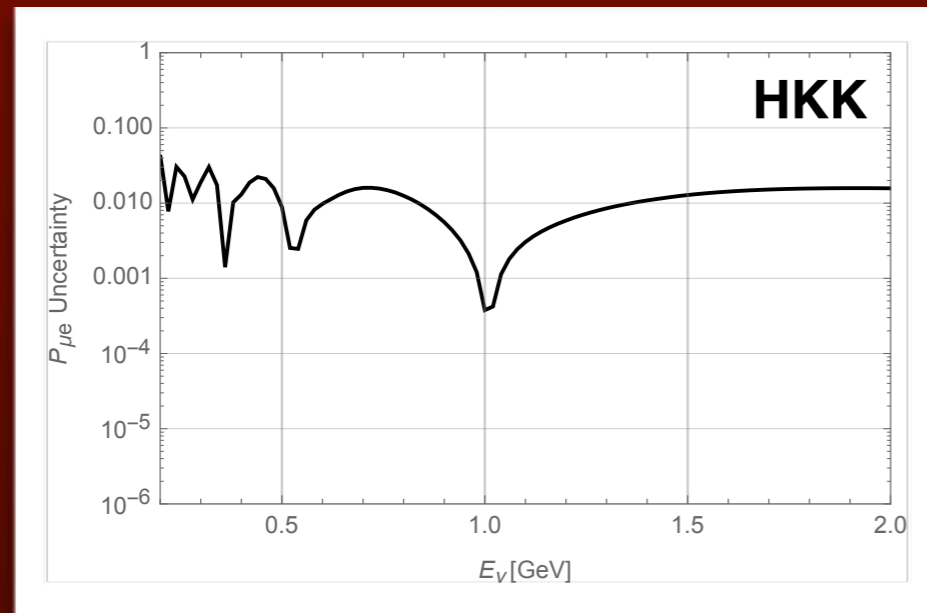
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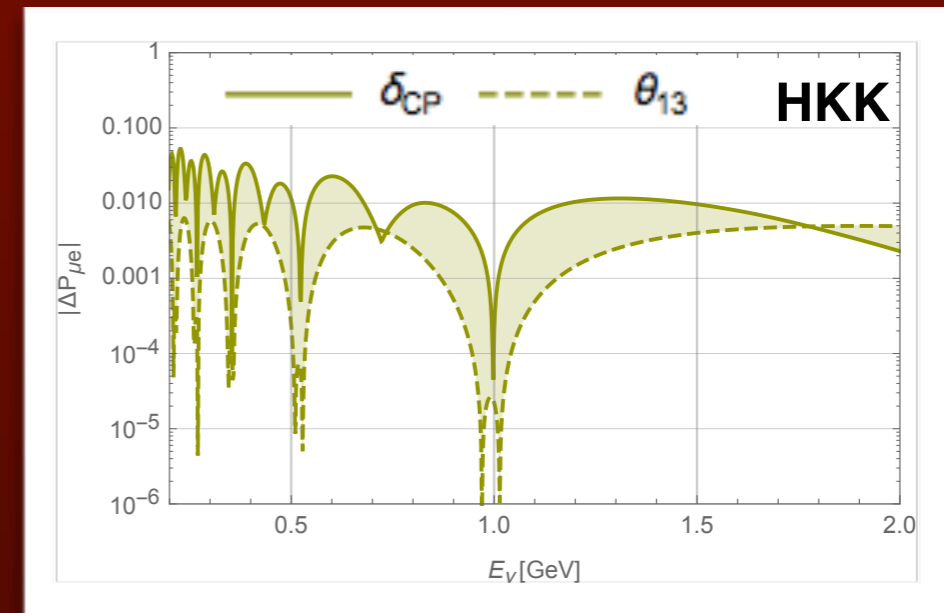




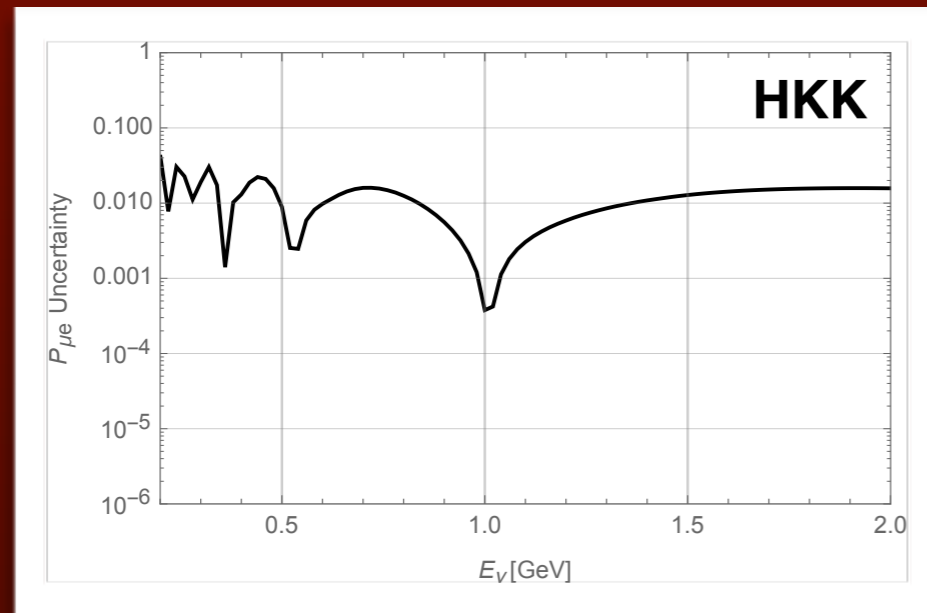
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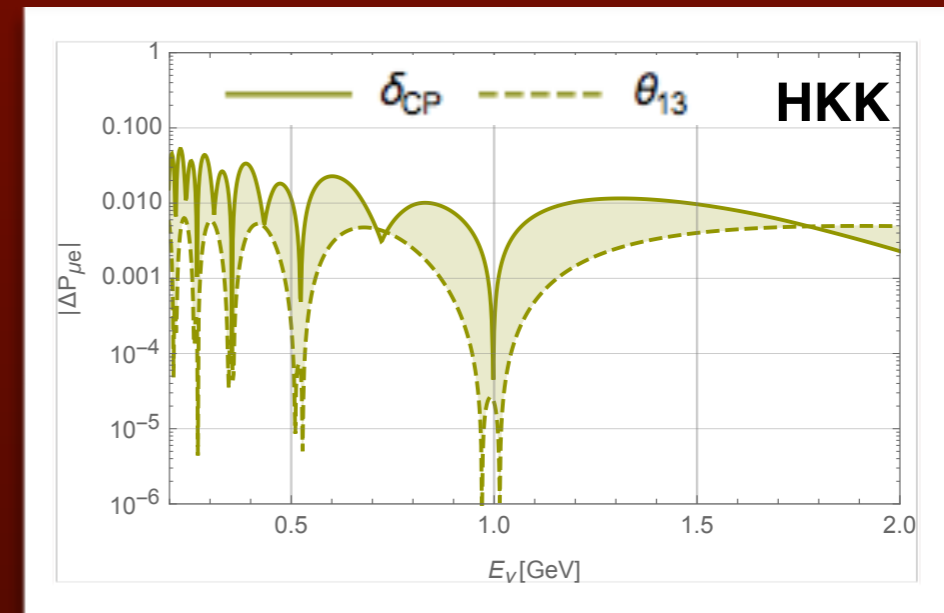
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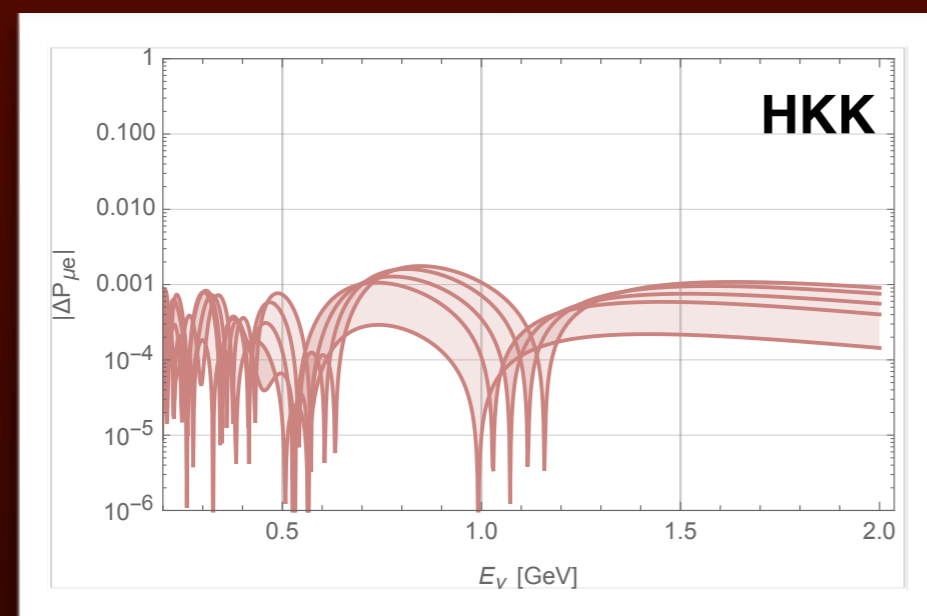
Parameter variation



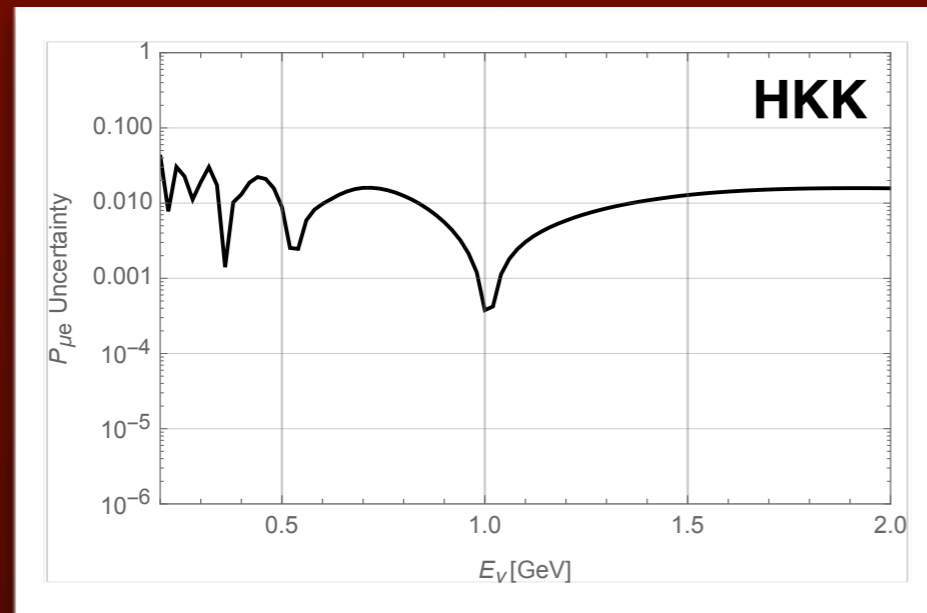
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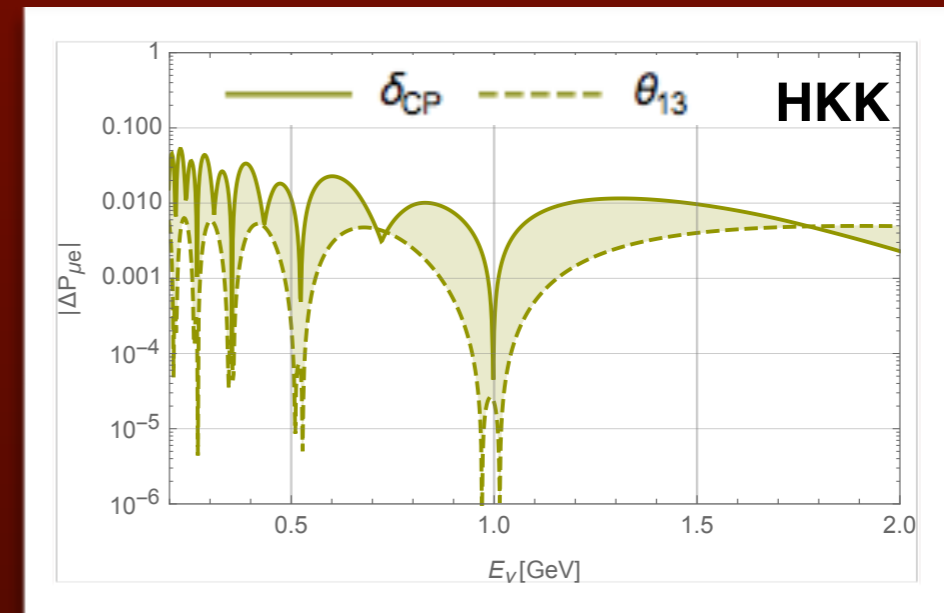
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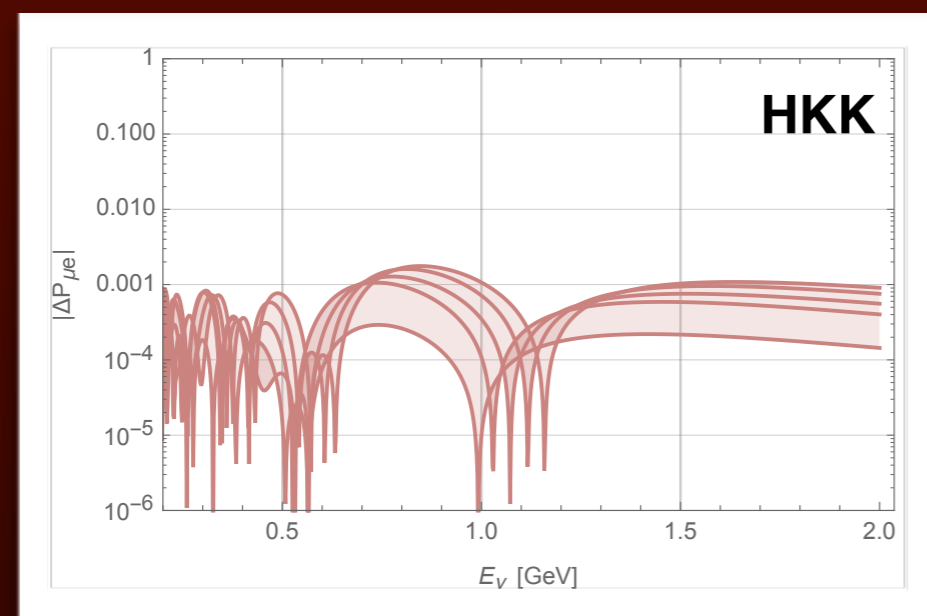
Density profile variation



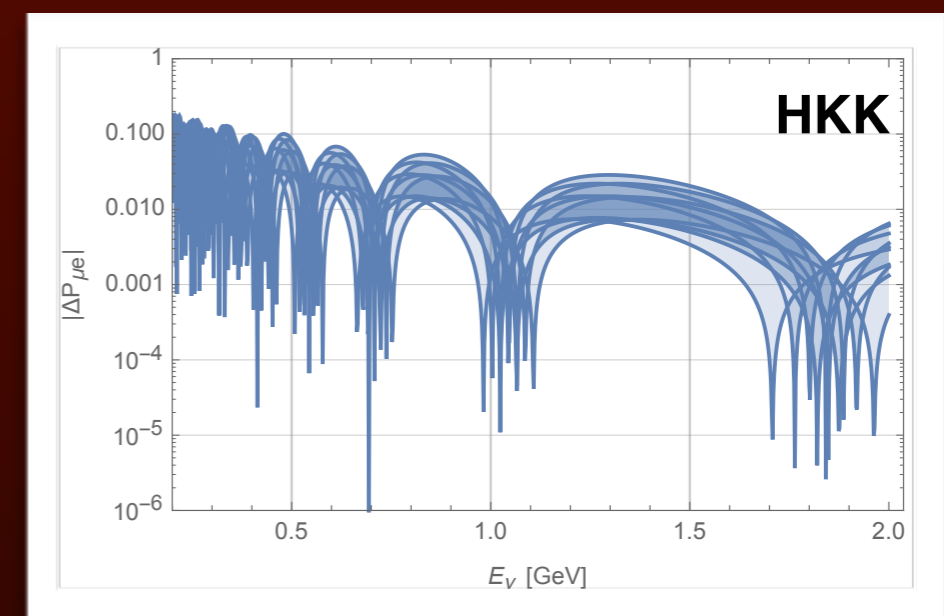
Sensitivity estimate



Parameter variation



Density profile variation



Profile differences

⇒ Significant differences between matter effects in T₂HK and T₂HKK.

- ⇒ Significant differences between matter effects in T₂HK and T₂HKK.
- ⇒ A varying matter density profile at T₂HKK could give rise to detectable matter effects.

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Second method for estimating
experimental uncertainty.

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Second method for estimating experimental uncertainty.

Profile effects on most probable T₂HKK baseline.

- ⇒ Significant differences between matter effects in T₂HK and T₂HKK.
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Second method for estimating
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Profile effects on most
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THANK YOU!