

Tau neutrino appearance with KM3NeT/ORCA

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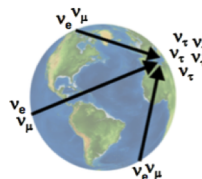
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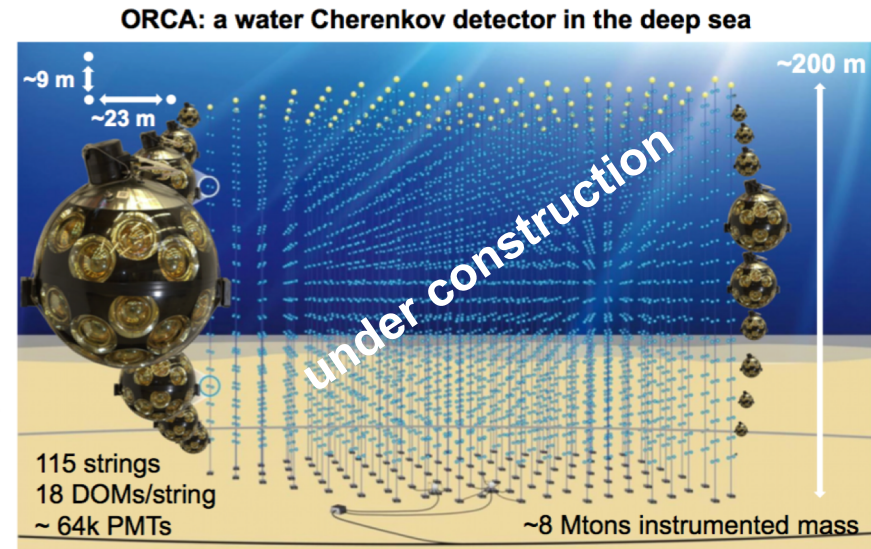
Measuring tau neutrinos in ORCA



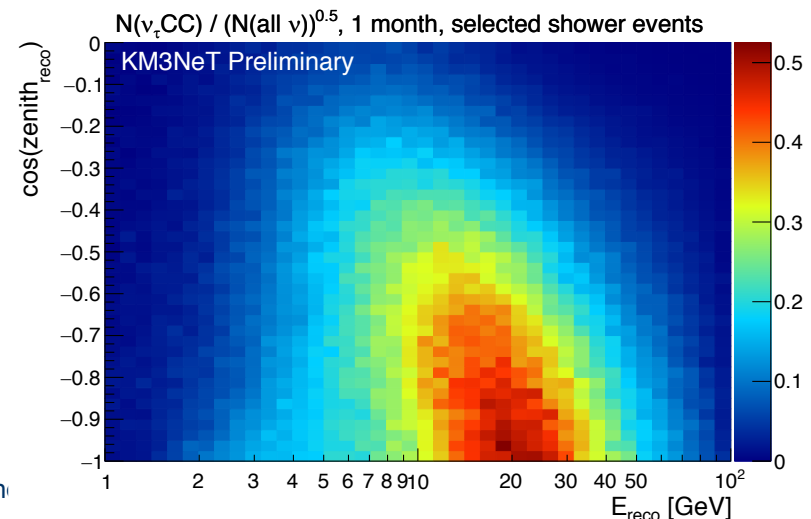
- Determine normalisation of tau-neutrino flux from oscillated atmospheric GeV electron and muon neutrinos
- Constrain tau-sector PMNS matrix elements
- ~3k tau neutrinos per year will be detected as excess in electron-like shower event channel
- Crucial event-type identification achieved with machine learning methods



Significance map for tau neutrino appearance, most signal at 10 – 30 GeV and up-going neutrino direction

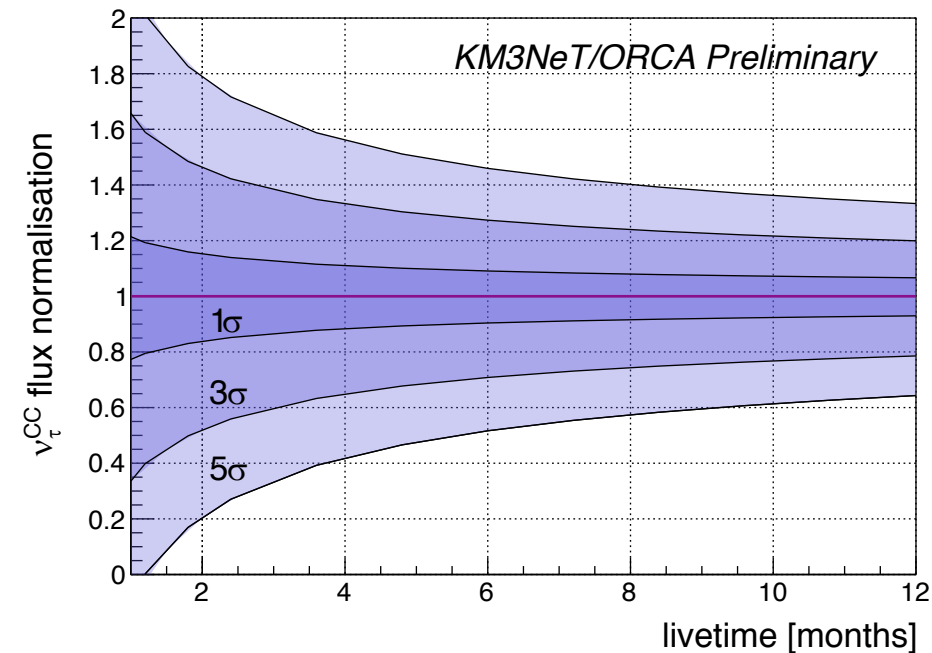


Letter of Intent for KM3NeT 2.0, J.Phys. G43 (2016) no.8, 084001

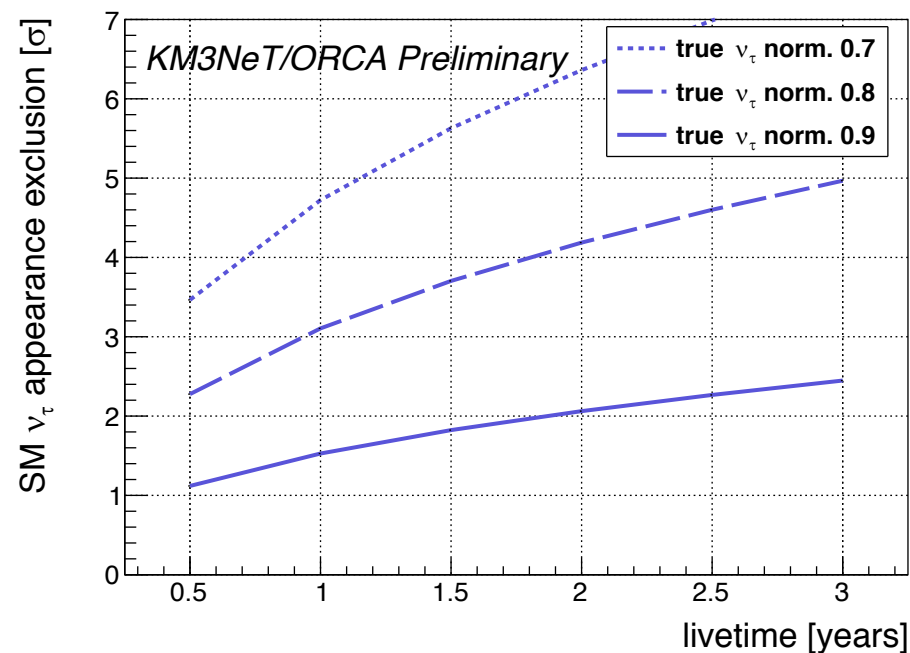




Sensitivities



At 3 sigma, flux normalisation constrained within 20% after 1 year of data taking with full detector. First results expected during construction phase.



Exclusion of 20% deviation from expected standard model flux normalisation with 5 sigma after 3 years of data taking.

Thank you for your attention!



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Backup slides



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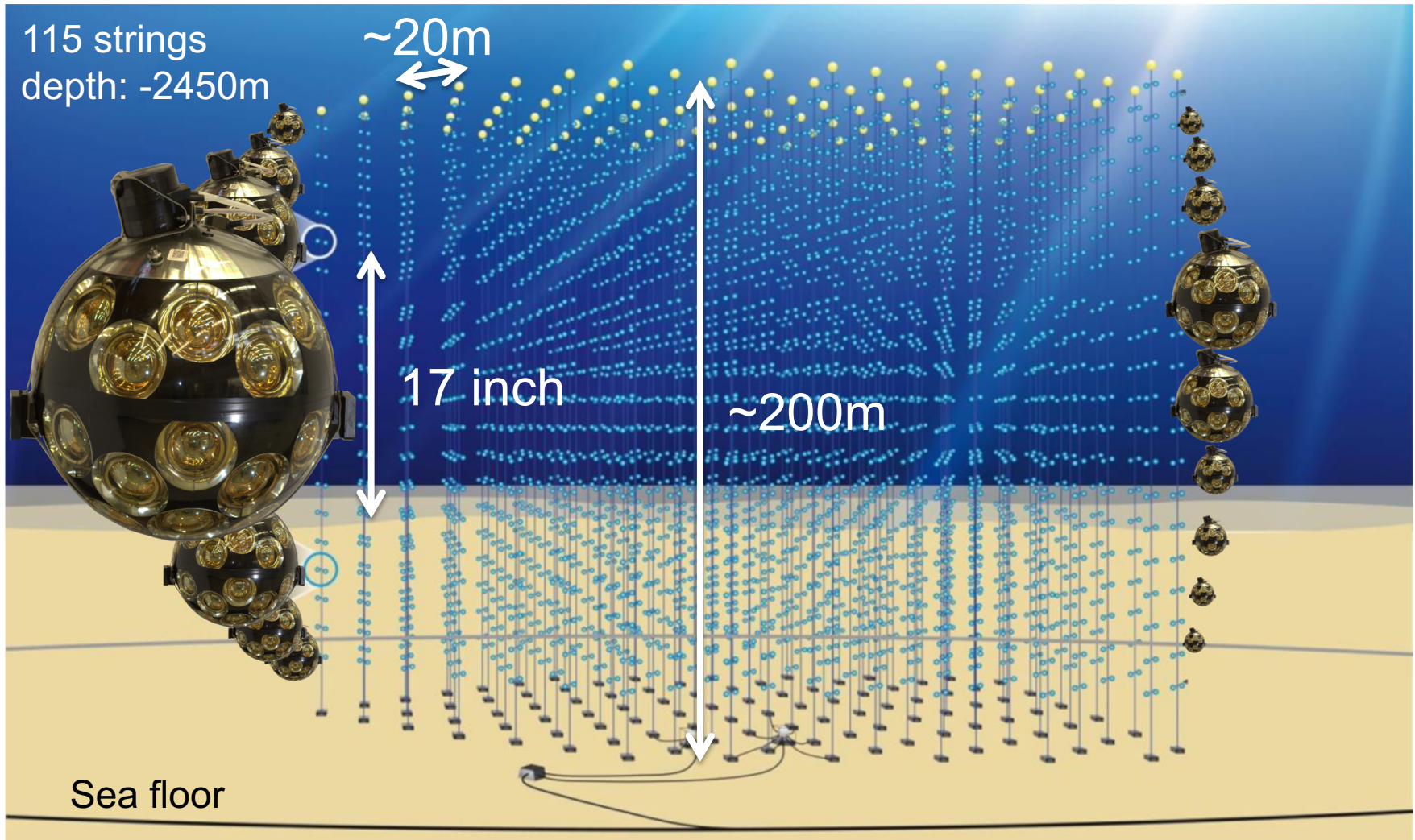


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KM3NeT / ORCA



Artistic view of one building block

Sensitivity to tau neutrino appearance

