

$\nu / \bar{\nu}$ CP-Violation Framework Exploiting π Decay at Rest

$$\pi^+ \rightarrow \mu^+ + \nu_{\mu}^{(\pi)}$$

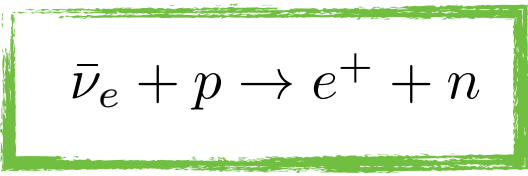
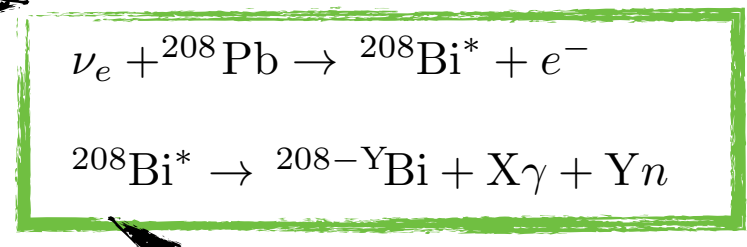
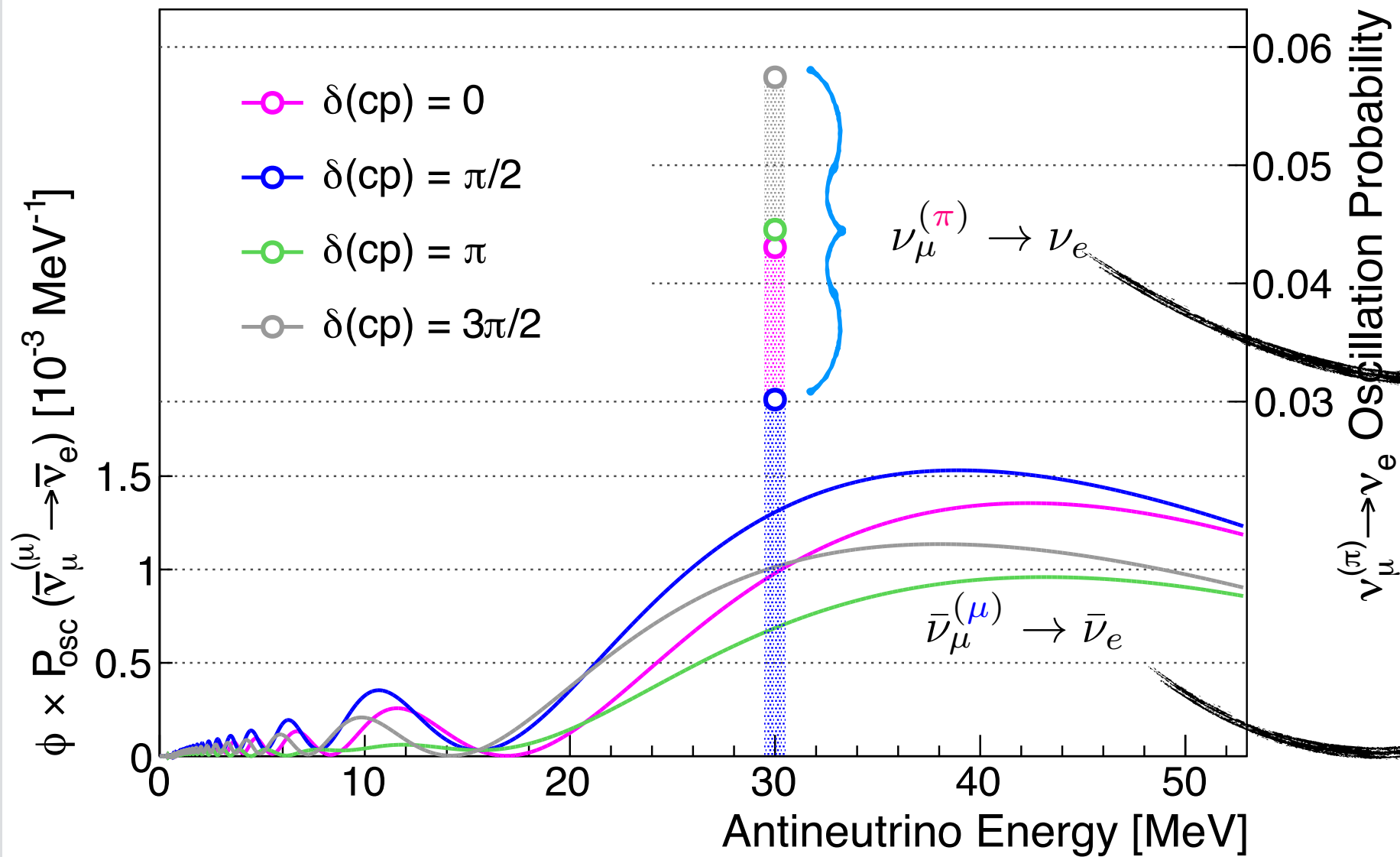
$$\mu^+ \rightarrow e^+ + \nu_e^{(\mu)} + \bar{\nu}_{\mu}^{(\mu)}$$

~~$$\pi^- \rightarrow \mu^- + \bar{\nu}_{\mu}^{(\pi)}$$~~

~~$$\mu^- \rightarrow e^- + \bar{\nu}_e^{(\mu)} + \nu_{\mu}^{(\mu)}$$~~

Captured by target

ν OSCILLATION



Sensitivity to CP Violation

Past proposals to investigate CP violation in the neutrino sector aimed at exploiting oscillation-induced distortions in the ν_e appearance spectrum at **multiple baselines** (HH)

Our approach yields **better sensitivity in the case of a single-baseline** detector, and the expected improvement in the case of a multiple-baseline configuration.

Beyond CP Violation

Pb allows to tag neutral current interactions thanks to neutron emission ► Use CC & NC to constrain non-standard ν interactions.

In case of **Supernova** burst, clear detection of ν_e , $\bar{\nu}_e$, ν_x

