



# Feasibility of detecting $^8\text{B}$ solar neutrinos at JUNO

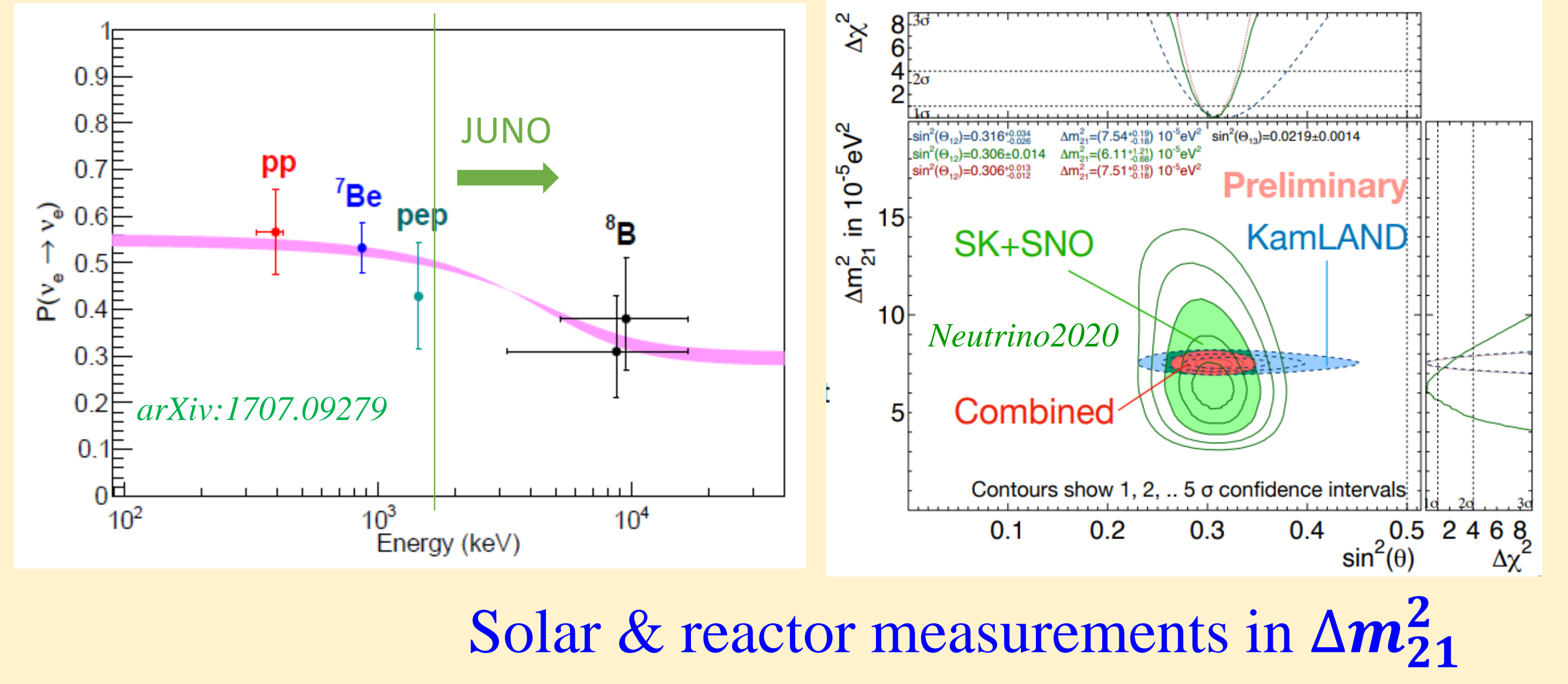
Presented by Jie Zhao (zhaojie@ihep.ac.cn), on behalf of JUNO collaboration  
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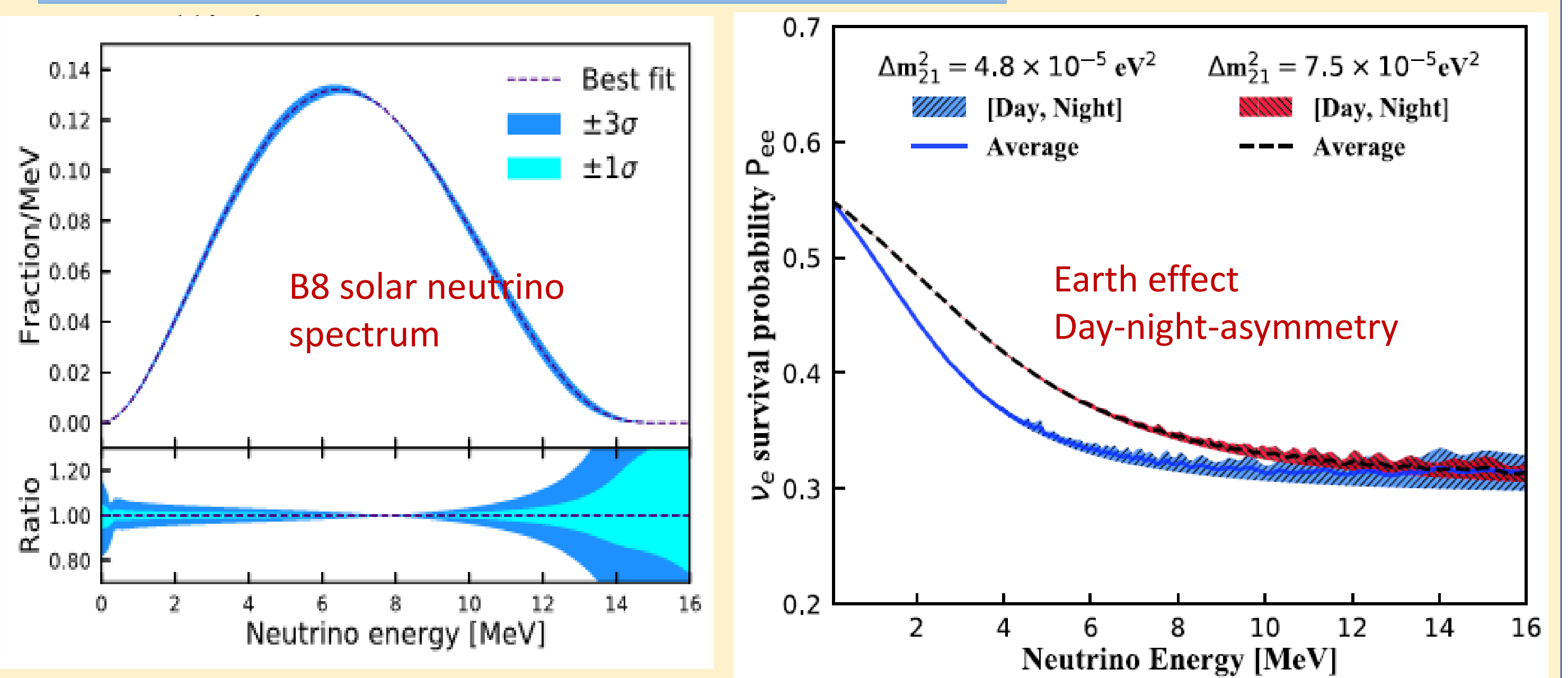
## Open questions

### Matter-vacuum Transition Phase



## Prediction

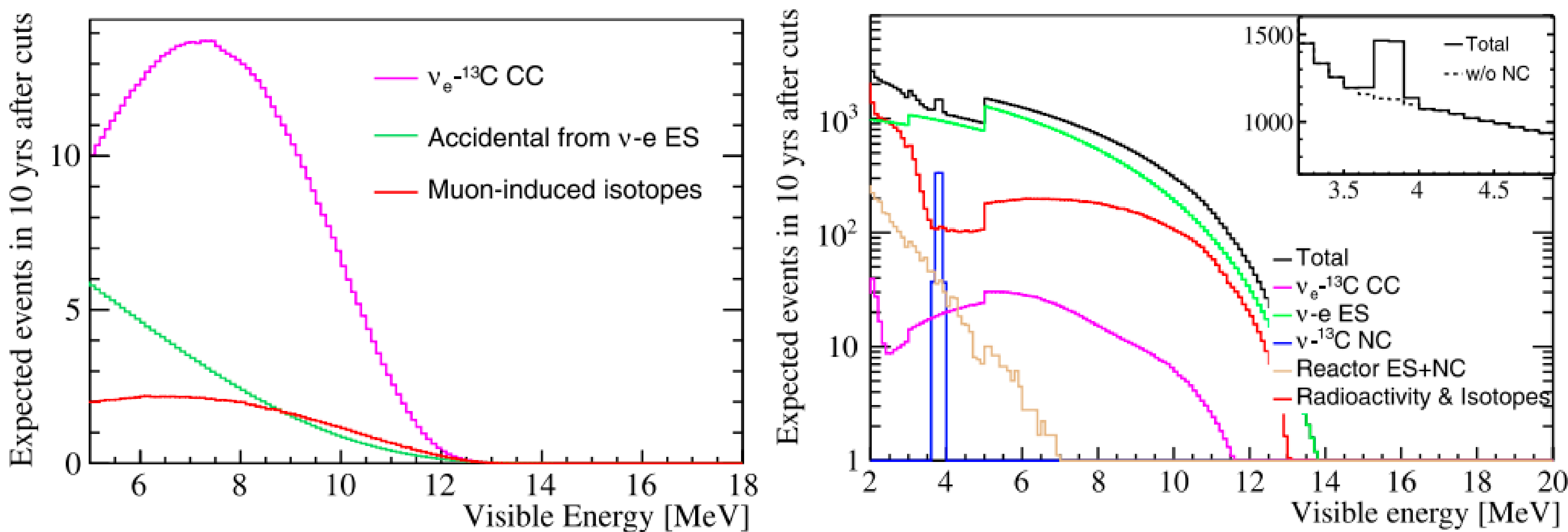
### Model: B16 SSM with high



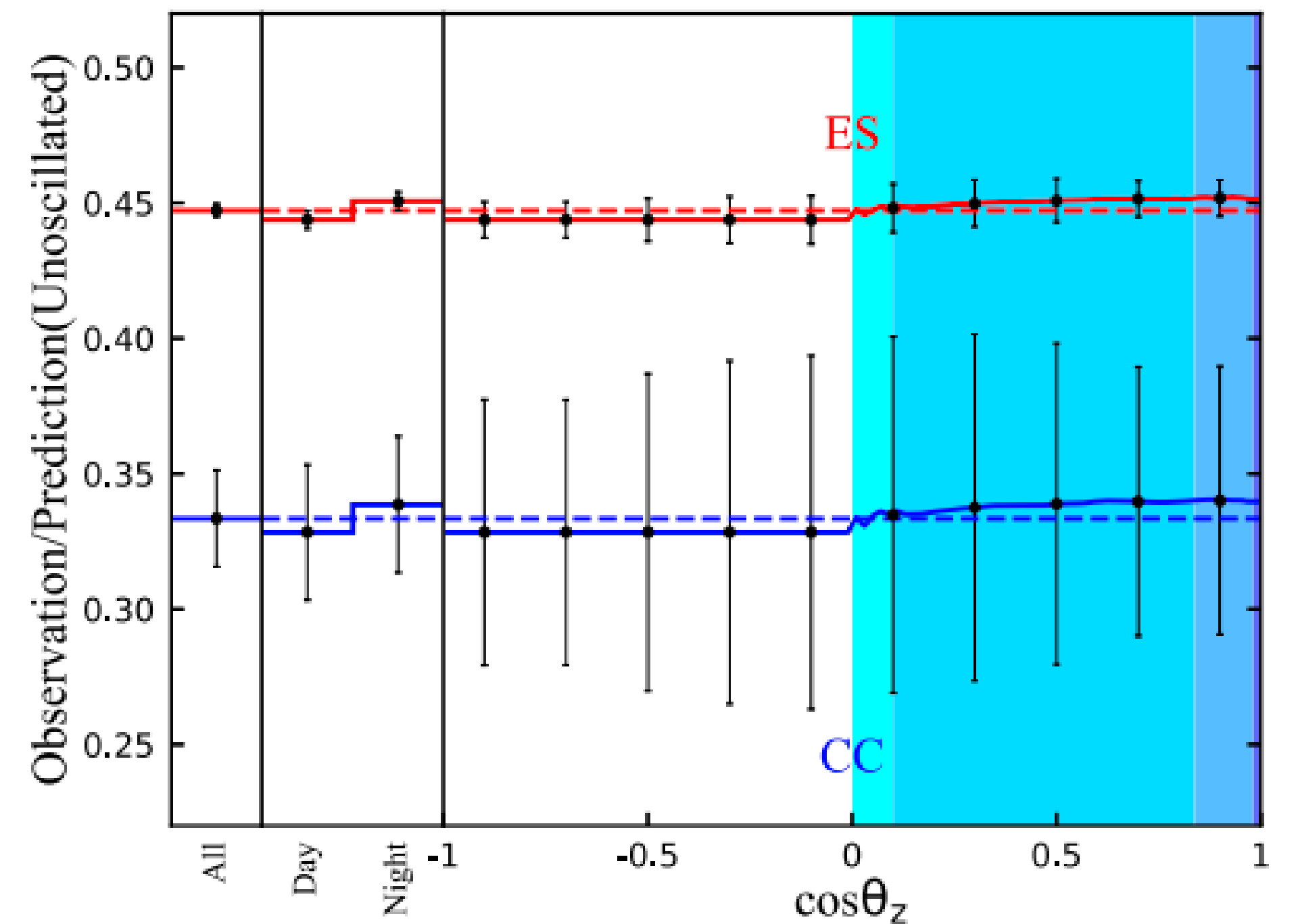
## Expected signal in JUNO detector

No.	Channels	Threshold (MeV)	Signal	Event Numbers (10 yr)
1	$\nu_e + ^{12}\text{C} \rightarrow e^- + ^{12}\text{N}(1^+; \text{gnd})$ (Fukugita et al. 1988)	16.827	$e^- + ^{12}\text{N}$ decay ( $\beta^+$ , $Q = 17.338$ MeV)	0.43
1	CC $\nu_e + ^{13}\text{C} \rightarrow e^- + ^{13}\text{N}(\frac{1}{2}^-; \text{gnd})$ (Suzuki et al. 2012)	2.2	$e^- + ^{13}\text{N}$ decay ( $\beta^+$ , $Q = 2.22$ MeV)	3929
2	$\nu_e + ^{13}\text{C} \rightarrow e^- + ^{13}\text{N}(\frac{3}{2}^-; 3.5 \text{ MeV})$ (Suzuki et al. 2012)	5.7	$e^- + p$	2464
4	NC $\nu_x + ^{12}\text{C} \rightarrow \nu_x + ^{12}\text{C}(1^+; 15.11 \text{ MeV})$ (Fukugita et al. 1988)	15.1	$\gamma$	4.8
3	$\nu_x + ^{13}\text{C} \rightarrow \nu_x + n + ^{12}\text{C}(2^+; 4.44 \text{ MeV})$ (Suzuki et al. 2019)	6.864	$\gamma + n$ capture	65
4	$\nu_x + ^{13}\text{C} \rightarrow \nu_x + ^{13}\text{C}(\frac{1}{2}^+; 3.089 \text{ MeV})$ (Suzuki et al. 2012)	3.089	$\gamma$	14
5	$\nu_x + ^{13}\text{C} \rightarrow \nu_x + ^{13}\text{C}(\frac{3}{2}^-; 3.685 \text{ MeV})$ (Suzuki et al. 2012)	3.685	$\gamma$	3032
6	$\nu_x + ^{13}\text{C} \rightarrow \nu_x + ^{13}\text{C}(\frac{5}{2}^+; 3.854 \text{ MeV})$ (Suzuki et al. 2012)	3.854	$\gamma$	2.8
7	ES $\nu_x + e \rightarrow \nu_x + e$	0	$e^-$	$3.0 \times 10^5$

## Spectrum for background and signal



## Day-night-asymmetry



## Model-independent measurement

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