Search for solar ^{8}B neutrinos and light dark matter with PandaX-4T

Speaker: 张敏祯

On behalf of PandaX collaboration

Shanghai Jiao Tong University

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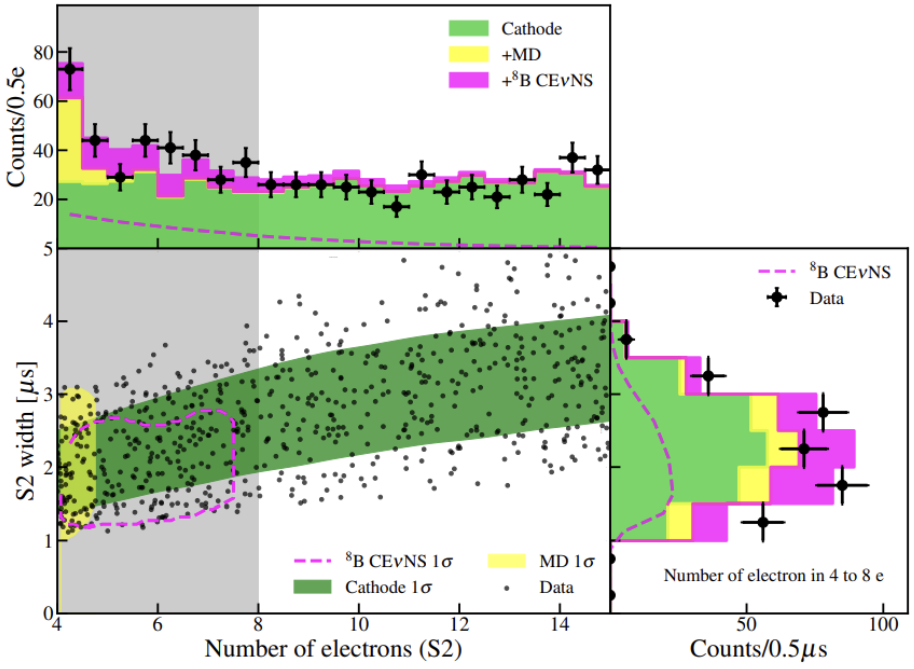
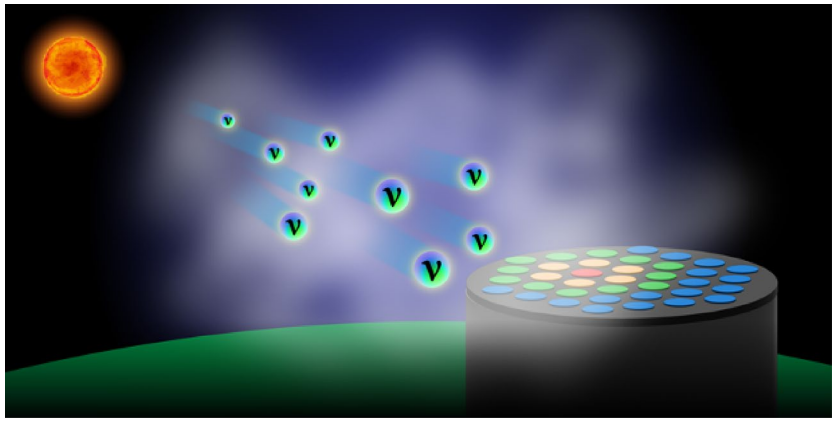
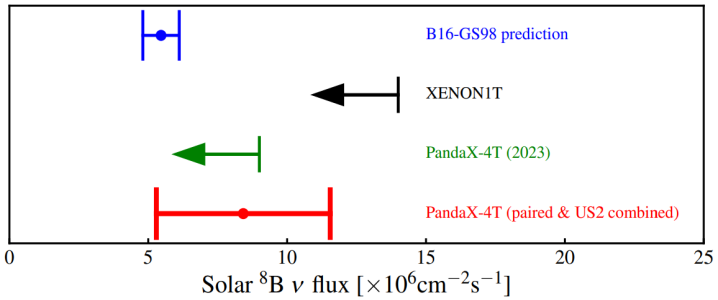
Solar ^{8}B neutrinos

- First indication (2.64σ) of ^{8}B coherent elastic neutrino-nucleus scattering





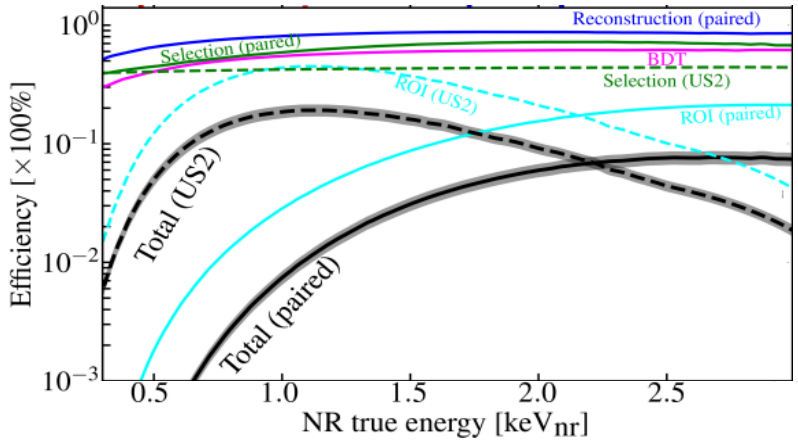


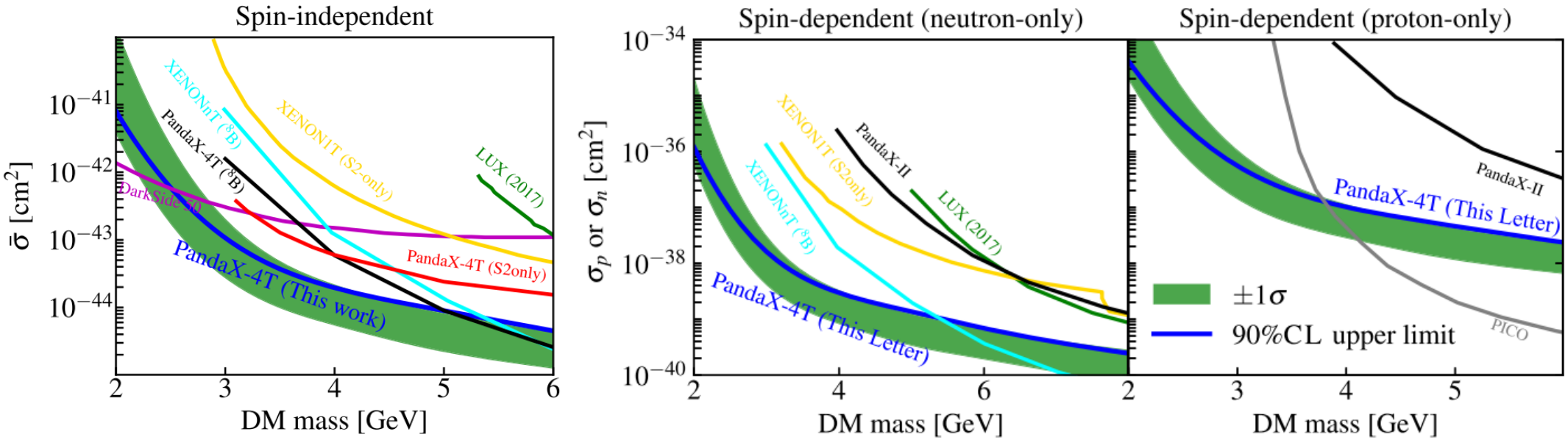
PRL 133, 191001 (2024), Editors' Suggestion, APS highlight

Light dark matter

Dark matter-nucleon interaction

- **Because of low energy threshold (0.33keV), achieve the most stringent limit for GeV level dark matter**



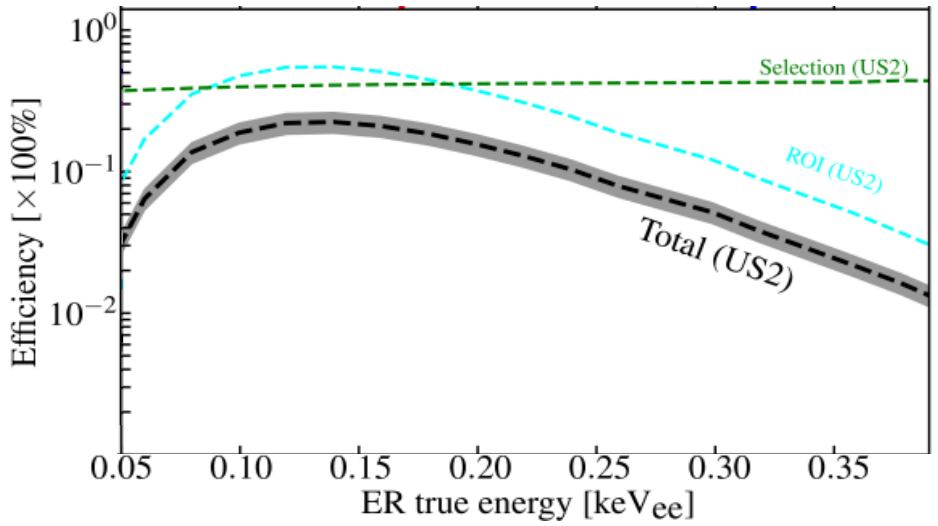


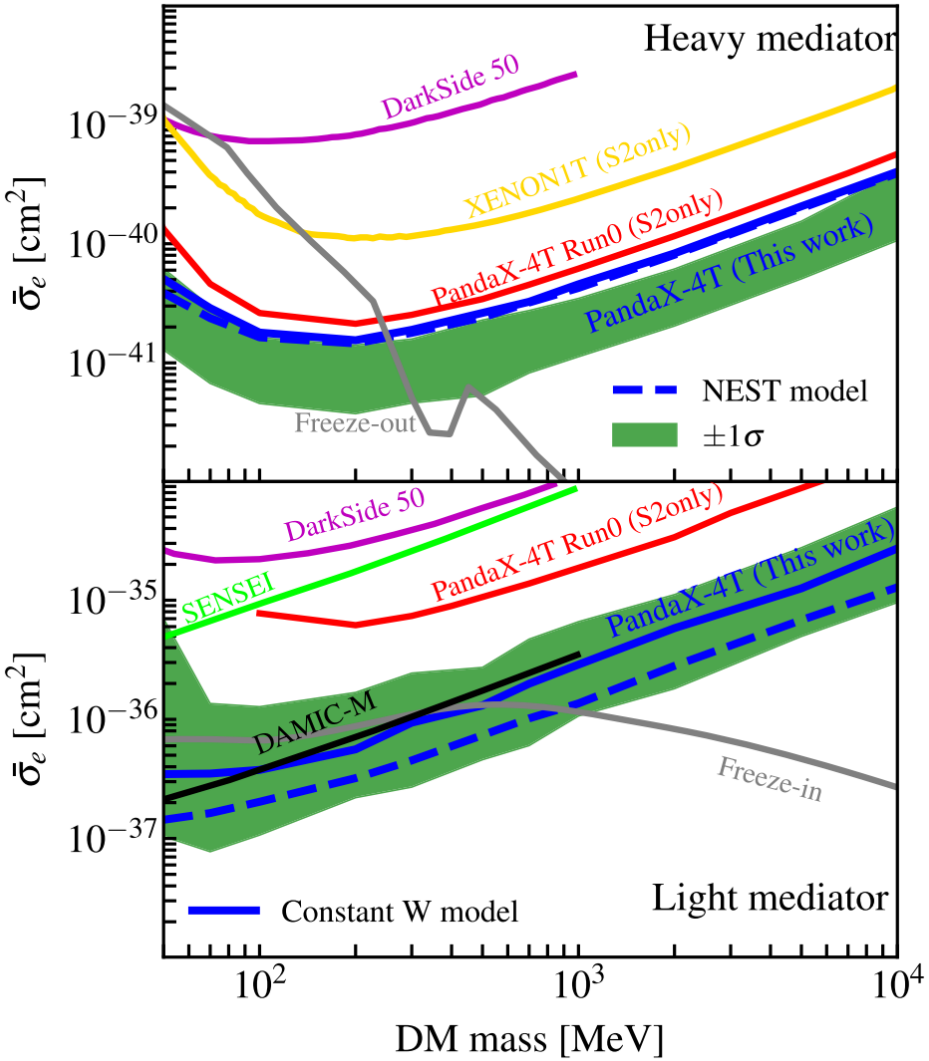
PRL 135, 211001 (2025), Editors' Suggestion

Light dark matter

Dark matter-electron interaction

- Through electron recoil(**0.04keV**), searching even lower mass range down to **50MeV**



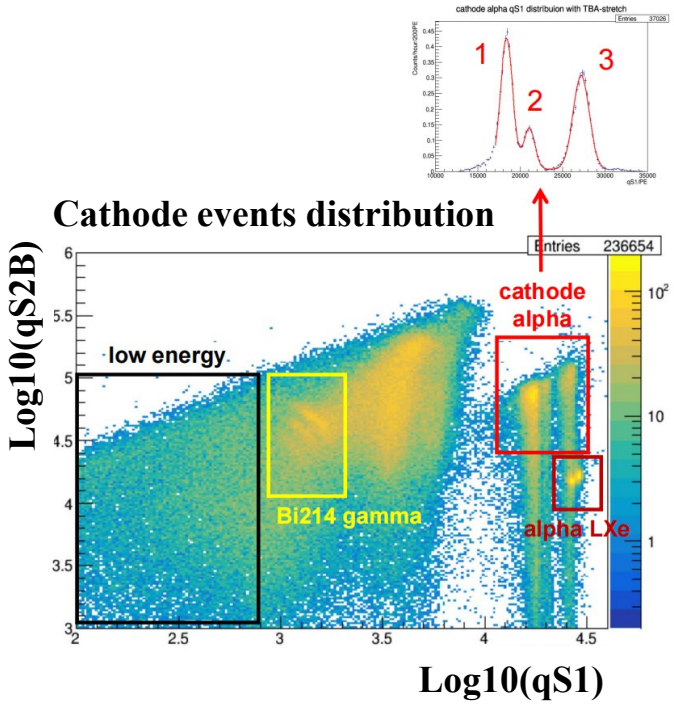


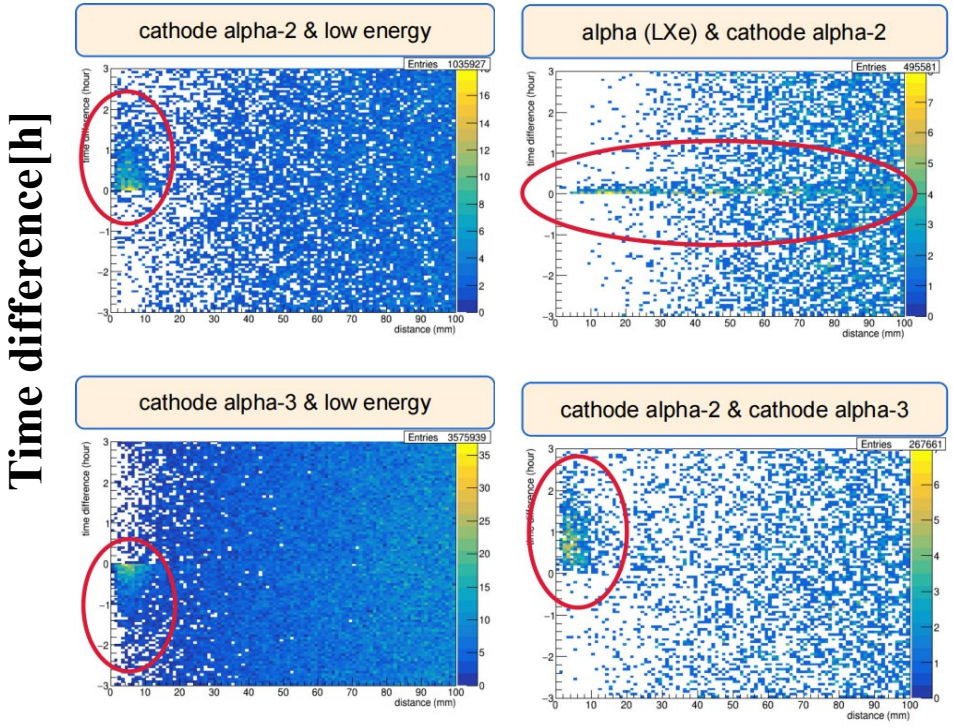
PRL 135, 211001 (2025), Editors' Suggestion

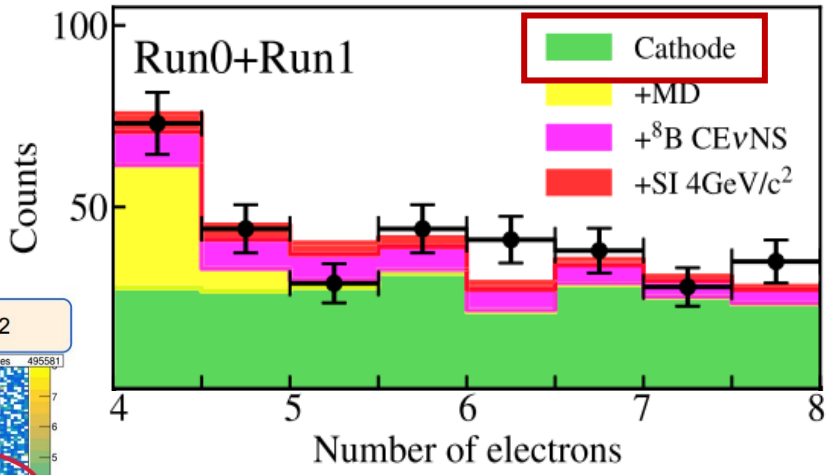
For higher sensitivity

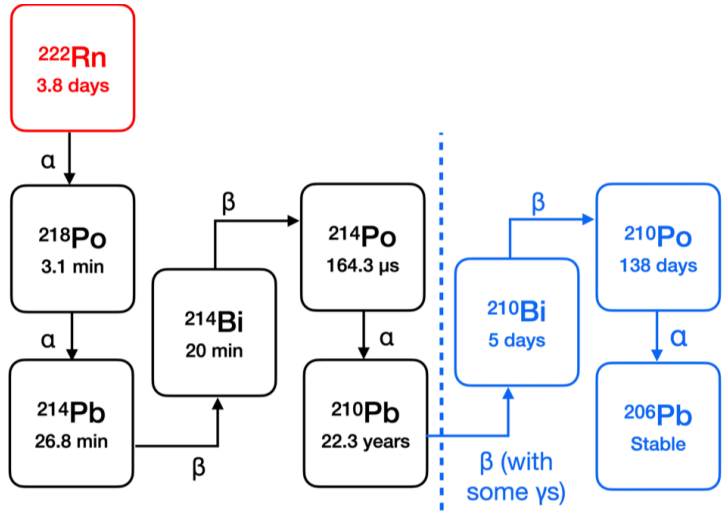
Further study on cathode

- Main source is Rn attached on cathode









PandaX-4T Run2

- **Exposure：3 times that of published data(Run0&Run1)**
- **Main effort：Background suppression**
  - **Use advanced machine learning model to extract features from original waveforms**
- **Run2 will further improve the sensitivity for low energy physical goals**

Dataset	Exposure
Published data	1.04 tonne·year
Run2	~3 tonne·year


PANDA X
Thank you !
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