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## Machine learning-based vertex reconstruction for reactor neutrinos in JUNO

*Tuesday 25 October 2022 11:00 (30 minutes)*

Jiangmen Underground Neutrino Observatory (JUNO), located at the southern part of China, will be the world's largest liquid scintillator (LS) detector. Equipped with 20 kton LS, 17623 20-inch PMTs and 25600 3-inch PMTs in the central detector, JUNO will provide a unique apparatus to probe the mysteries of neutrinos, particularly the neutrino mass ordering puzzle. One of the challenges for JUNO is the high precision vertex reconstruction for reactor neutrino events. This talk will present machine learning-based vertex reconstruction in JUNO, particularly the comparison of different machine learning models as well as the optimization of the model inputs for better reconstruction performance.

### Significance

the content of this talk mainly comes from two papers, one has already been published and the other has been received by the Journal.

### References

Vertex and energy reconstruction in JUNO with machine learning methods (<https://doi.org/10.1016/j.nima.2021.165527>)  
Improving the machine learning based vertex reconstruction for large liquid scintillator detectors with multiple types of PMTs (<https://doi.org/10.48550/arXiv.2205.04039>)

### Experiment context, if any

JUNO

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**Session Classification:** Poster session with coffee break

**Track Classification:** Track 2: Data Analysis - Algorithms and Tools