

# Towards Core Collapse Supernova detection with the 3-inch PMT system in JUNO

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The detection of neutrinos from the next galactic Core Collapse Supernova (CCSN) is a unique opportunity to study its explosion mechanism with profound implications in astrophysics, nuclear physics, and particle physics. The Jiangmen Underground Neutrino Observatory (JUNO), currently under construction in Southern China, is a 20-kiloton liquid scintillator detector equipped with two independent sub-systems: 17612 20-inch PMTs and 25600 3-inch PMTs. With its large volume, unprecedented energy resolution, and the sensitivity to all neutrino flavors, JUNO is competitive for low energy astrophysical neutrino studies, such as the CCSN. Initially designed as a calibration system for non-linearity effects of the 20-inch PMTs, the 3-inch PMT system can provide complementary results especially in the case of exceptionally high-rate events and saturated signals. This poster presents the capabilities of the 3-inch PMTs in detecting the next CCSN. It highlights the detector response, especially under the extraordinary circumstance of a nearby CCSN, and showcases the performance in neutrino identification.

## Poster prize

No

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## Collaboration (if any)

JUNO collaboration

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**Classifica Sessioni:** Poster session and reception 2

**Classificazione della track:** Supernova neutrinos