Primary goal: determine neutrino mass hierarchy
by precisely measuring the medium baseline reactor neutrino energy spectrum.

Resolution Budget at 1 MeV

\[ \frac{\sigma(E)}{E} = \sqrt{\left[ \frac{a}{\sqrt{E}} \right]^2 + [b(E)]^2} \]

Stochastic term ~ 1200 p.e./MeV
(~ Light yield, Transparency, Photo-coverage, QE...)

Non stochastic terms (~ control of systemics)

Stereo Calorimetry for JUNO

18,000 large (20-inch) PMTs: waveforms
reconstruction, unprecedented dynamical
range, big challenge for control of systemics.

25,000 small (3-inch) PMTs: “photon
counting”, almost zero-dynamic range,
virtually no non-linearity, a linear reference
to LPMT.
Enhanced Physics Capabilities with SPMT System

- **Solar oscillation parameters**
  An independent photo detection system for $\Delta m_{12}^2$ and $\theta_{12}$ measurement with a precision comparable to LPMT system.

- **Reconstruction of cosmic-ray muon**
  SPMT system: better time resolution and avoidance of saturation. It can handle large energy deposits to provide valuable inputs for precise studies of muon tracks.

- **Supernova neutrino**
  SPMT system: lower light level, fast and dead-time-less readout which are expected to provide additional analysis control for maximal physics extraction during supernova core collapse observation.

**Instrumentation of SPMT System**

- Coax cable Signal+HV
- High Voltage divider
- Connector
- High Voltage Splitter
- Power Board
- Under Water Box
- CAT5 LV Clocks Data

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