

# The JUNO large PMT readout electronics

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- The Jiangmen Underground Neutrino Observatory (**JUNO**) is a neutrino medium baseline experiment under construction in China aiming at the determination of **neutrino mass ordering**.
- To reach its desiderata, JUNO must reach an **unprecedented energy resolution** of 3% at 1 MeV and will thus employ a primary calorimetry system consisting of **~18000 20'' Large-PMT**.
- The **electronic chain** processing the Large-PMT signals is **crucial to the success of the experiment**. The readout electronics must be able to:
  - sustain and manage trigger rates up to 1 kHz, acquiring the full event waveforms;
  - assure a  $\leq 0.5\%$  failure rate over 6yr as most of the readout electronic will be placed underwater (close to the PMTs to reduce noise on the analog signal) and thus inaccessible.
- The custom designed readout electronic underwent **extensive testing** to assess and verify its performances, which have proven to amply **fulfill design requirements**.
- An **automated test protocol** was developed and integrated to characterize and **test the readout electronics' properties** (i.e., linearity, stability, trigger rate and network performances) during the mass production at the test facility of Kunshan, China.

