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Super-Kamiokande PMT characterizations using artificial magnetic field and robotic laser-equipped arms

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Super-Kamiokande (Super-K) is a neutrino detector located in Japan. Its research program includes search for proton decay and measurement of neutrino oscillations among others. It contains ˜11,000 20 inches photomultiplier tubes (PMTs) surrounding a massive tank filled with 50 ktonne of ultra-pure water. A detailed understanding of the PMTs and their response to environmental effects, is necessary for a precise understanding the detector and consequent reduction of systematic uncertainties. This is also a very important contribution towards the future Hyper-Kamiokande detector which will be instrumented of ˜40,000 PMTs, helping realize the best design and monitoring needed to achieve maximum sensitivity of the experiment.

I will present the measured non-uniformity of the PMT used in Super-K as well as the effects of the magnetic field on the PMT parameters. I will also describe the recent facility upgrades implemented to improve the accuracy and reproducibility of the measurements.

TIPP2020 abstract resubmission?

No, this is an entirely new submission.

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