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## Understanding the temperature dependence of SiPM characteristics

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The prototype detector of ICAL experiment at the India-based Neutrino Observatory i.e., mini-ICAL is in operation at the IICHEP, Madurai. A Cosmic Muon Veto detector around the mini-ICAL is being built using extruded plastic scintillators with embedded WLS fibers to propagate light to SiPMs for detecting scintillation photons. The SiPMs will be calibrated using an ultrafast LED driver. An experimental setup was built using a thermal chamber to characterise the SiPMs in a temperature controlled environment. The readout electronics involves trans-impedance amplifiers to amplify the SiPM output pulses and a digital storage oscilloscope for the data collection. Along with the basic characterisation i.e. gain and breakdown point estimation of the SiPM, various other characteristics of the Hamamatsu SiPM (S13360-2050VE), e.g. signal shape, optically correlated and uncorrelated noise, recovery time etc were studied as a function of the SiPM's overvoltage ( $V_{ov}$ ), number of photoelectrons and the ambient temperature. This paper will cover the details of the experimental setup and results.

### Session

Future Experiments and Detector Development

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