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POCAM in the IceCube Upgrade

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The IceCube Neutrino Observatory at the geographic South Pole instruments a gigaton of glacial Antarctic ice with over 5000 photosensors. The detector, by now running for over a decade, will be upgraded with seven new densely instrumented strings. The project focuses on the improvement of low-energy and oscillation physics sensitivities as well as re-calibration of the existing detector. Over the last few years we developed a precision optical calibration module (POCAM) providing self-monitored isotropic nanosecond light pulses for optical calibration of large-volume detectors. Over 20 next-generation POCAMs will be calibrated and deployed in the IceCube Upgrade in order to reduce existing detector systematics. We report a general overview of the POCAM instrument, its performance and calibration procedures, as well as simulation studies to estimate its anticipated physics impact.

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Subcategory

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