

## The Analog Photon Processor ASIC

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Full waveform digitization is an obvious solution for many particle physics detectors: Nyquist sampling ensures no information is lost, and extraction of important features can be postponed to later offline analysis, or can even be done by a fast FPGA before storage to disk. For large-scale photon detectors used in neutrino physics, however, the dynamic ranges run from just single photons to perhaps a few thousand per channel, and we are interested only in the number of photons each sensor detected and their arrival times. I will describe here an “Analog Photon Processor” (APP) ASIC, being designed for the TSMC 65 nm process, that extracts the features necessary to do precision photon counting and time measurement, even in the case of multiple photons piled up on a single waveform. The APP does this by fast analog measurements, thus significantly reducing data volumes and cost. The APP will be particularly useful for future detectors, such as the proposed Theia hybrid Cherenkov/scintillation detector.

### Do you need a VISA letter for traveling to Canada ?

No

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