

Front end electronics for Hybrid Avalanche Photo Diode

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For the upgrade of the Belle detector (Belle-II) at the KEK collider, we are developing a proximity focusing ring imaging Cherenkov detector using aerogel as radiator, which will allow efficient separation of kaons from pions in the wide range of particle momenta up to 4Gev/c. One of the photon detector candidates (which has to operate in a strong magnetic field of 1.5T) is a HAPD of proximity focusing type with 144 channels. The present work discusses the design and implementation of the special front end electronics for this device. The analog signals from HAPDs will be first fed into Asic chips having amplification, shaping and comparator capabilities for 36 channel per chip. The HAPD readout will consist of 4 readout chips and an FPGA which will allow efficient data compression and transfer. The design has to take into account very limited space available and very harsh environment.

We will present the bench test measurements of the HAPD prototype front end electronics.

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