



Contribution ID: 94

Type: Poster

The Front End Readout Electronics for the Hybrid Avalanche Photo Detector of the Belle II ARICH

Monday, 5 September 2016 17:25 (15 minutes)

In the forward end-cap of the Belle II spectrometer, the proximity focusing RICH with aerogel radiator will be installed for charged particle identification. At the back side of the Hybrid Avalanche Photo Detector (HAPD), a low power front end electronics board will be mounted. The board consists of a 11 layer PCB with four custom ASICs on the HAPD side and a FPGA on the other side. The front end board is designed to work in the 1.5 T magnetic field and withstand the 10 years of neutron irradiation. The 36 channel ASICs are responsible for amplification, shaping and discrimination of small (about 35000 e-) single photo-electron signals. The Xilinx Spartan-6 FPGA samples the digitized signals and sends the data via optical link to the experiment common data acquisition cards.

During the design, the functionality of the boards has been tested on the bench, in the test beam and during the neutron and gamma irradiation in the nuclear reactor.

420 front end boards were produced and tested prior the installation in the detector. In the presentation, we will present the module design, its functionality and the results of different tests.

Registered

Yes

Primary author: PESTOTNIK, Rok (Jozef Stefan Institute (SI))

Co-authors: KINDO, Haruki (SOKENDAI); KAKUNO, Hidekazu (University of Tokyo); ADACHI, Ichiro (KEK); HATAYA, KOKI (Tokyo metropolitan university); TABATA, Makoto; MRVAR, Manca (Jozef Stefan Institute); YONENAGA, Masanobu (Tokyo Metropolitan University); KRIZAN, Peter (University of Ljubljana); DOLENEC, Rok (Institut "Jozef Stefan"); KORPAR, Samo (Jozef Stefan Institute (SI)); OGAWA, Satoru (Toho University (JP)); NISHIDA, Shohei (KEK); IWATA, Shuichi (Tokyo Metropolitan University); SUMIYOSHI, Takayuki; YUSA, Yosuke

Presenter: PESTOTNIK, Rok (Jozef Stefan Institute (SI))

Session Classification: Poster Session B

Track Classification: Technological aspects and applications of Cherenkov detectors