Contribution ID: **456**   Type: **Poster presentation**

The development of a data acquisition system based on FPGA

Tuesday 12 June 2018 15:55 (15 minutes)

On one side, traditional data acquisition systems based on servers are widely used in high energy experiments. Because challenges from high data throughput, low latency, low power consumption and low cost, this traditional solution is hard to face them. On the other side, the community of Field Programmable Gate Array become large and mature, many functions such as 1 Gaps TCP/IP communication which was mainly realized in x86 server can be realized in Field Programmable Gate Array chips. So a new data acquisition system whose architecture is based on FPGA is researched and developed. There are several features for this system. First, this system could be communicated with readout electronics and upper computers by a 1 Gaps TCP/IP Ethernet. Second, experimental data from readout electronics could be stored in a SATA disk directly by Field Programmable Gate Array. Third, a data acquisition software is developed by web pages and stored in Field Programmable Gate Array. Users use a web browser to monitor the status of data acquisition system. Fourth, WebSocket protocol between user web browser and data acquisition system is used to make a browser send http responses automatically, in order to update the result of data acquisition web pages. Fifth, histograms and hitmaps used widely in experiments are generated in Field Programmable Gate Array, and will be showed in web pages. The power consumption and used resources will be evaluated at the same time.

Minioral

No

Description

FPGA daq

Speaker

ZHE NING

Institute

IHEP Beijing

Country

China

Author: Mr NING, ZHE (Institute of High Energy Physics, CAS)

Co-author: Mr ZHANG, JIE (Institute of High Energy Physics, CAS)

Presenter: Mr NING, ZHE (Institute of High Energy Physics, CAS)

Session Classification: Poster 1

Track Classification: Control, Monitoring,Test and Real Time Diagnostics Systems