

Mimosa integration in the PADME DAQ

Georgi Georgiev

PADME weekly meeting

26 July 2019

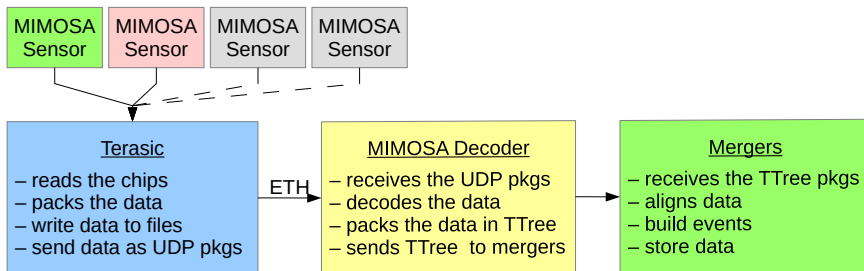


Research fund ДН-08/14 from 12.2016
MoU CY – LNF-INFN 70-06-497/07-10-2014

Outline

- 1 Block scheme
- 2 Decoding software
- 3 Collected data
- 4 Problems
- 5 TODO

Block scheme



MIMOSA decoding software

- Successfully decodes the MIMOSA data with bad data handling
- Input:
 - Input from file fully implemented
 - UDP stream to be done (Eleuterio's few-liner example)
- Exports frames to bitmap image files
 - For debugging and online visualisation
- Prints fired pixels in the current frame
 - Might be useful to tune the trigger delay
- TTree packing and DCS communication to be discussed and implemented

Collected data

- One MIMOSA chip
- Periodic trigger
- Data stored in files
- 20 kPOT/bunch

Run#	Beam	NEvt	Pos [cm]([mm])
3000	Off	1000	4.5(50)
3001	On	1000	4.5(50)
3002	On	10000	4.5(50)
3003	On	1000	6.5(30)
3004	On	10000	6.5(30)
3005	On	50000	8.0(15)
3006	On	1000	9.0(5)
3007	On	50000	9.0(5)

All the events are almost empty. The most probable reason is that both the triggers are periodic with a **random offset**, **which remains unchanged** for the entire run.

This makes them never overlap.

Spotted problems

- daqSoC on the terasic brd not sending UDP packets
 - I wrote simple program to verify the UDP communication
The network is working as expected
 - Repeated frames seen at several places
 - exactly the same content in run 3007: Evt.934 Brd.0 Fr.2,
Evt.935 Brd.0 Fr.1, Evt.936 Brd.0 Fr.1, Evt.937 Brd.0 Fr.0
- ? Feature ? Bug in the FW ? Bug in the SW

TODO

- Debug the network sections in **daqSoC** source code
- Connect the trigger and align the delay
- Decision and implementation of decoder–merger communication
- Connecting the other chip in the acquisition
- Mounting the other 2 MIMOSA chips