

SoLiD/PVDIS DAQ

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DAQ limitations

L1

- GEM multiplexed readout 40 MHz : transfer from APV25 to VME board
 - 141 words to transfer from APV to VME (128 channels + time stamp and header)
 - $141 * 25 \text{ ns} = 3.6 \text{ us} \rightarrow 270 \text{ KHz limit}$
 - For 3 samples readout : $10.8 \text{ us} \rightarrow 90 \text{ KHz limit}$
- Crate transfer 115 Mb/s : VME 320 limitation
- Network speed : 115 MB/s for 1 ethernet line
- Need to generate trigger in less than pipeline length 4 us

L3

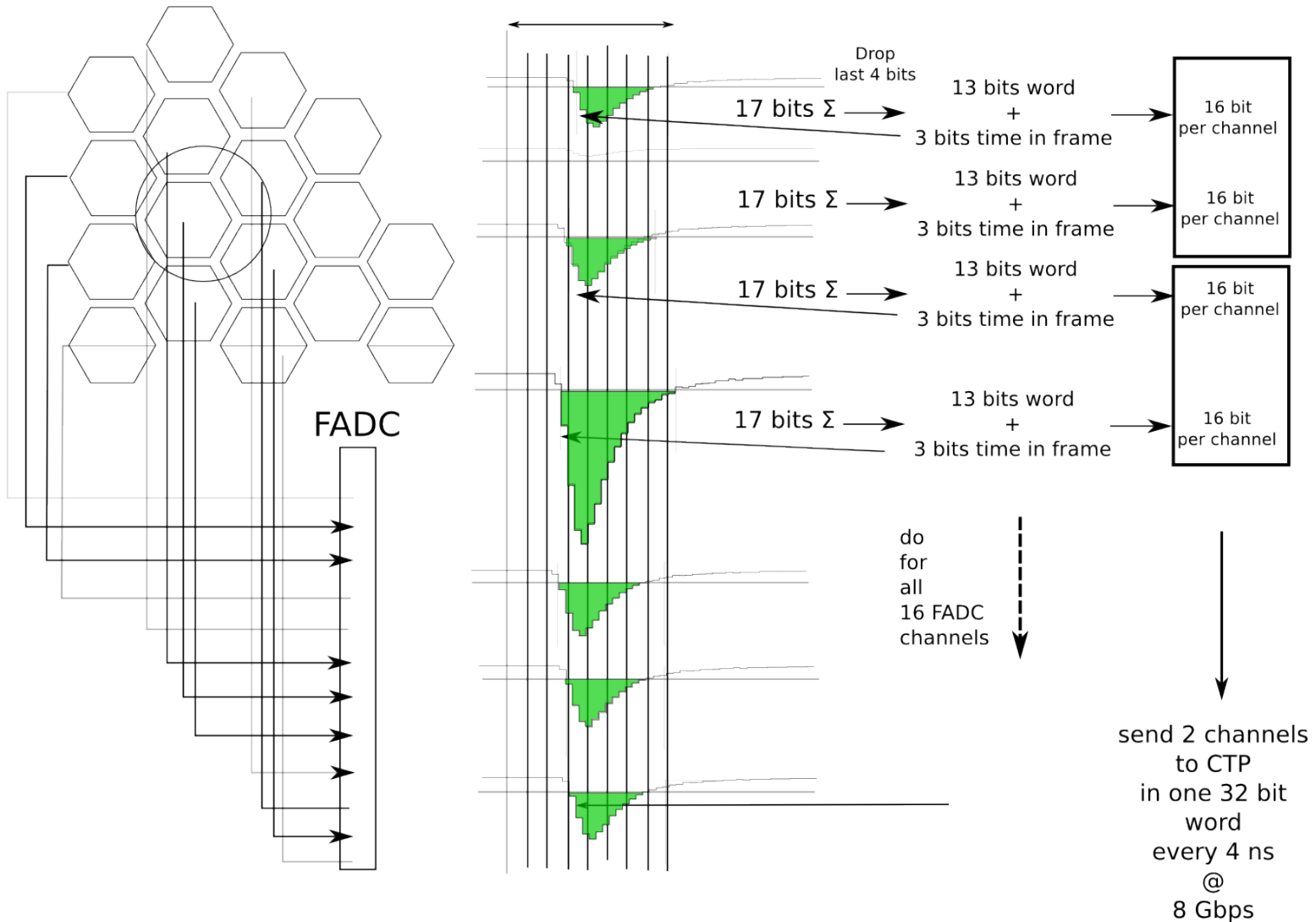
- Disk write speed : 250 MB/s
- Total amount of data
- Can be improved at money cost : faster GEM chip, add more crates

FADC mode and event size

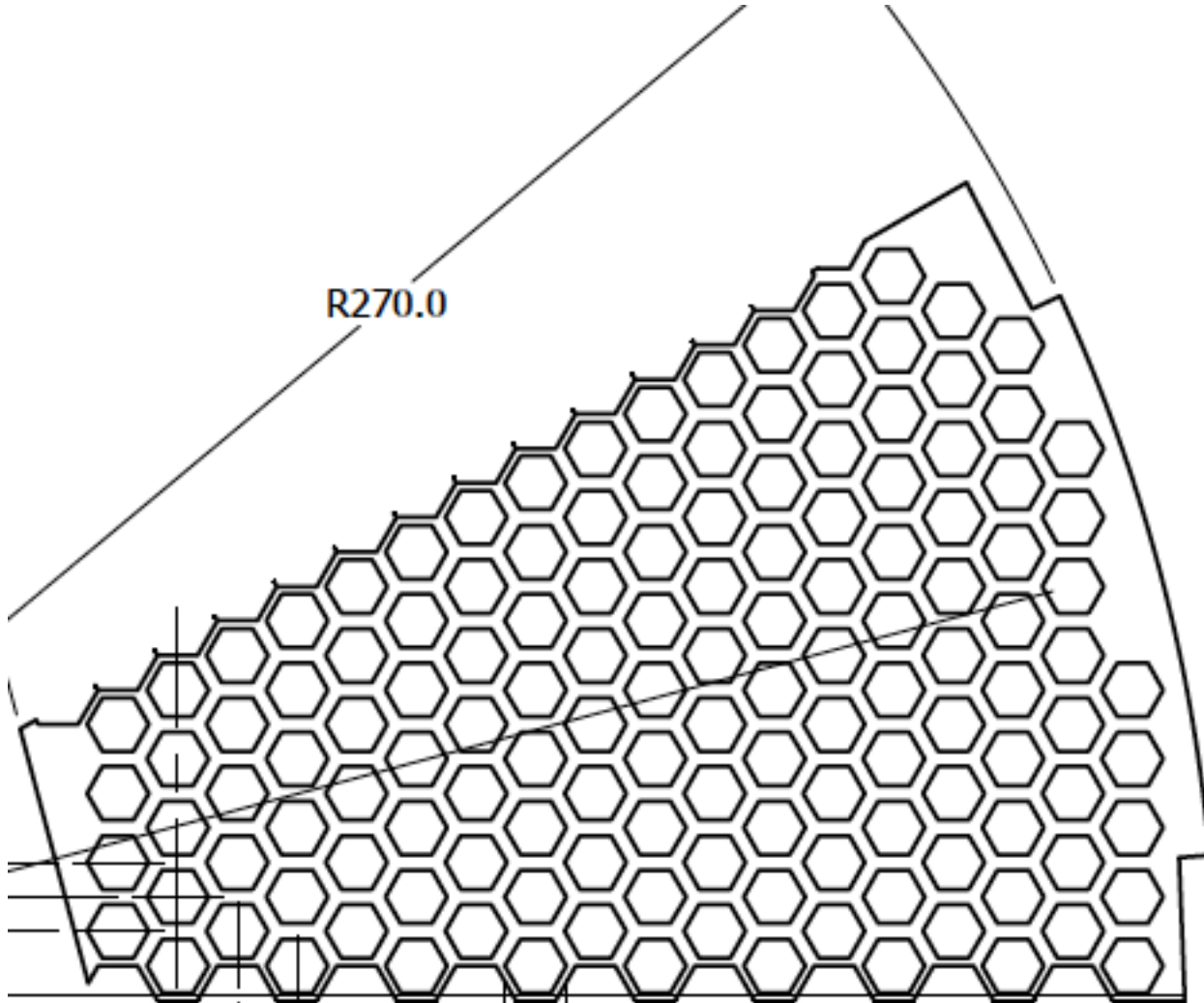
- FADC in amplitude time mode :
 - 1 pulse integral and 1 time on 16 bit word
 - Channel timestamp
 - 2 32 bit word
- FADC Sample mode
 - Send n samples
 - $n/2$ 32 bit words + header and trailer

PVDIS trigger HPS scheme

Start Frame 32 ns



Calorimeter sector



PVDIS trigger improvement

Expensive version : add SSP

