

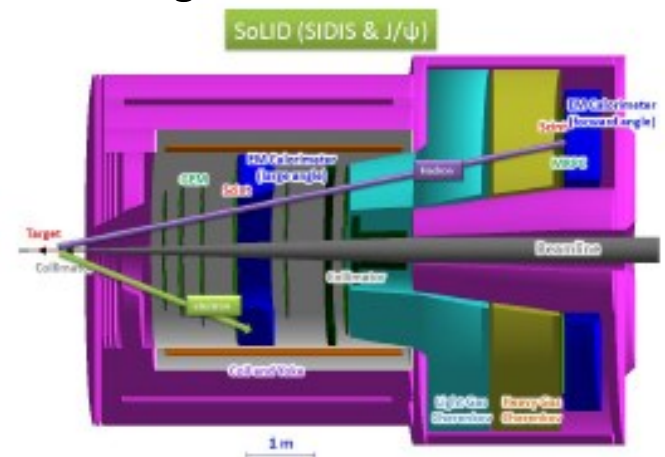
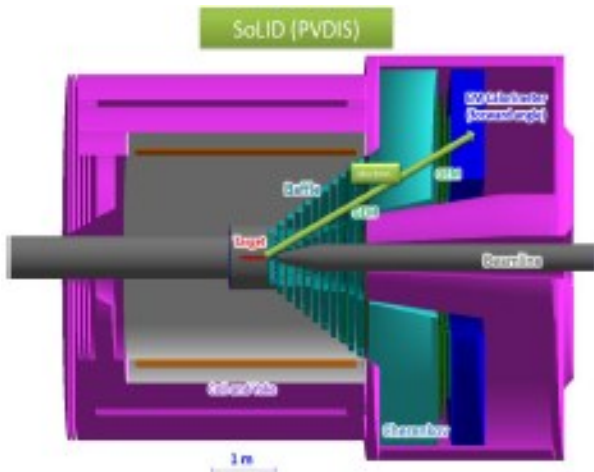
# SoLID DAQ requirements

- PVDIS

- Detect DIS electrons
- Physics rate from 200 KHz to 500 KHz
- 30 independent DAQ /sector
- Individual trigger rates expected to be 30 KHz
- Up to 60 KHz trigger rate capability per sector
- Single inclusive electron trigger
- Coincidence ECAL – Cerenkov

- SIDIS

- Coincidence DIS electron and leading pion
- Physics rate about 4 KHz
- Coincidence trigger
  - Electron
    - FAEC Cerenkov SPD MRPC
    - LAEC SPD
  - Pion
    - ECAL SPD MRPC
- 70 KHz of coincidence trigger
- Planned : total 100 KHz triggers with singles

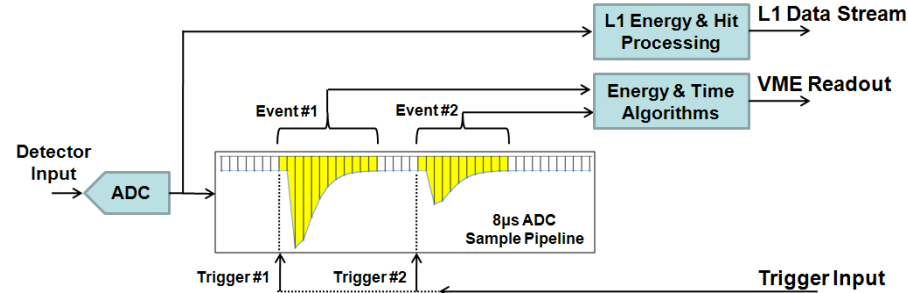


# SoLID DAQ overview

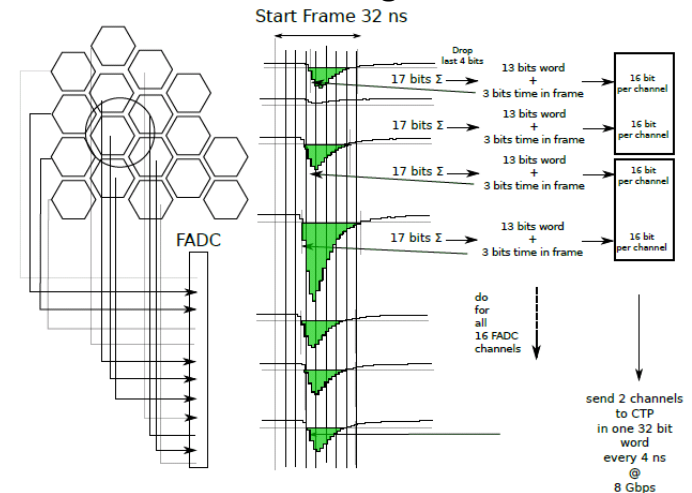
- 292 Flash ADCs ( 12 bit 250 MHz)
  - 1800 channels Calorimeter
  - 270 channels Light Gas Cerenkov
  - 480 channels Heavy Gas Cerenkov
  - 300 channels SPD Scintillator
- 3300 channels of high resolution time of flight MRPC ( 80 ps )
- GEM readout (164 000 channels)
  - APV25 ASIC based readout (40 MHz pipelined 128 channels multiplexed readout )



## Pipelined DAQ

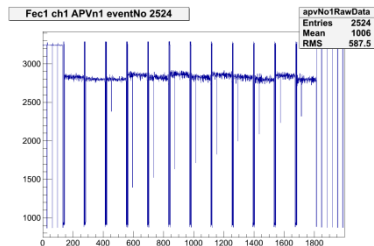
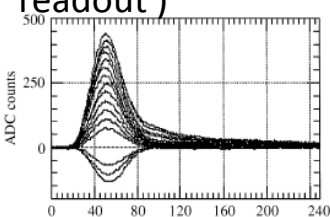


- Digital triggering scheme ( coincidence calorimeter and cerenkov )
- Calorimeter clustering

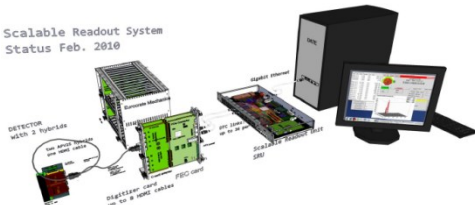


- Budget request ~ 2.2 M\$

- Dedicated readout
  - 2048 channels / module
  - On board subtraction and background processing
  - VME or ethernet based



Scalable Readout System  
Status Feb. 2010



02/23/2015