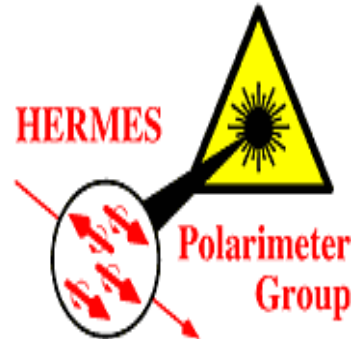


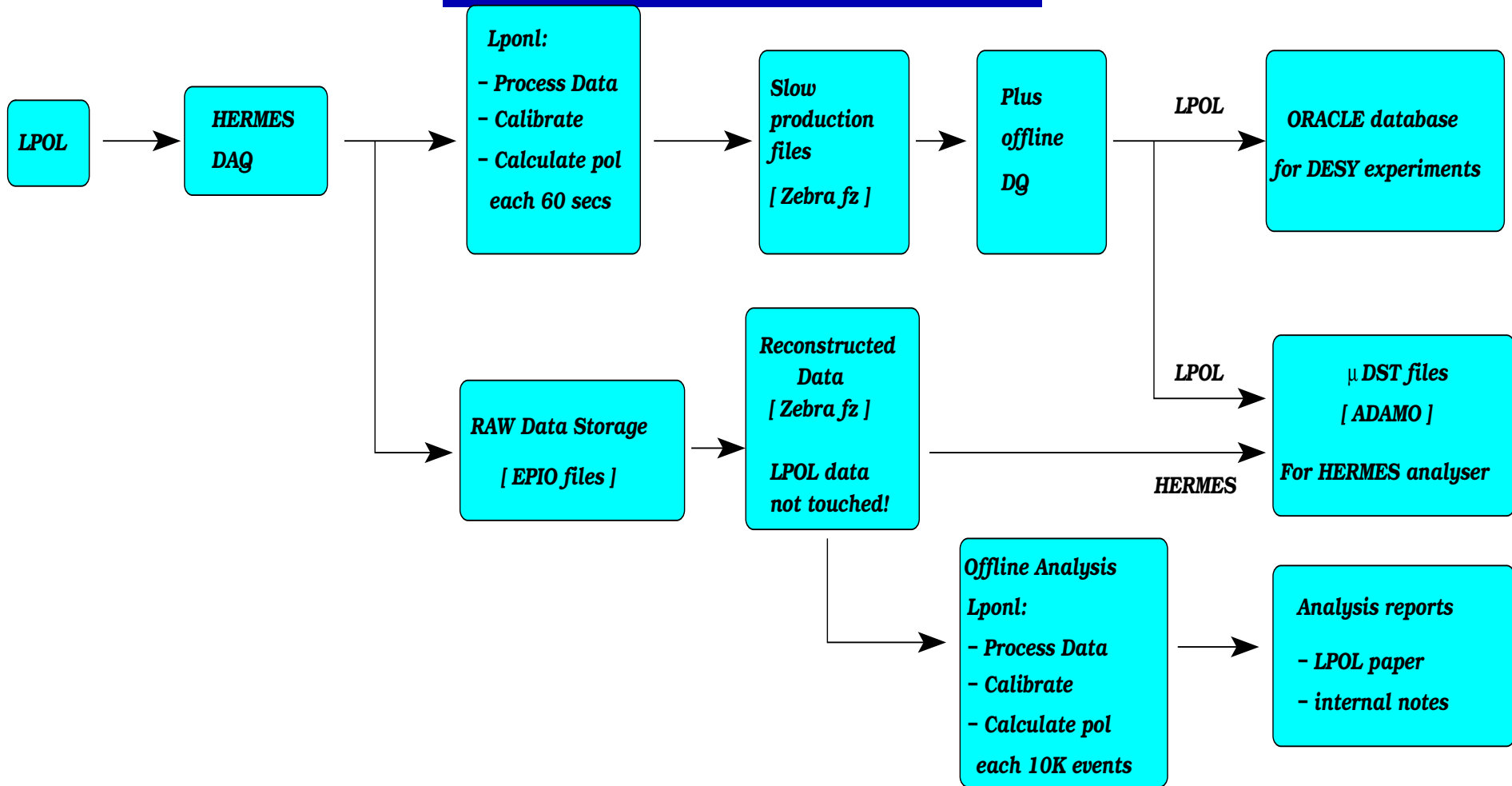
Reorganisation of LPOL Data

Riccardo Fabbri (DESY-FLC)

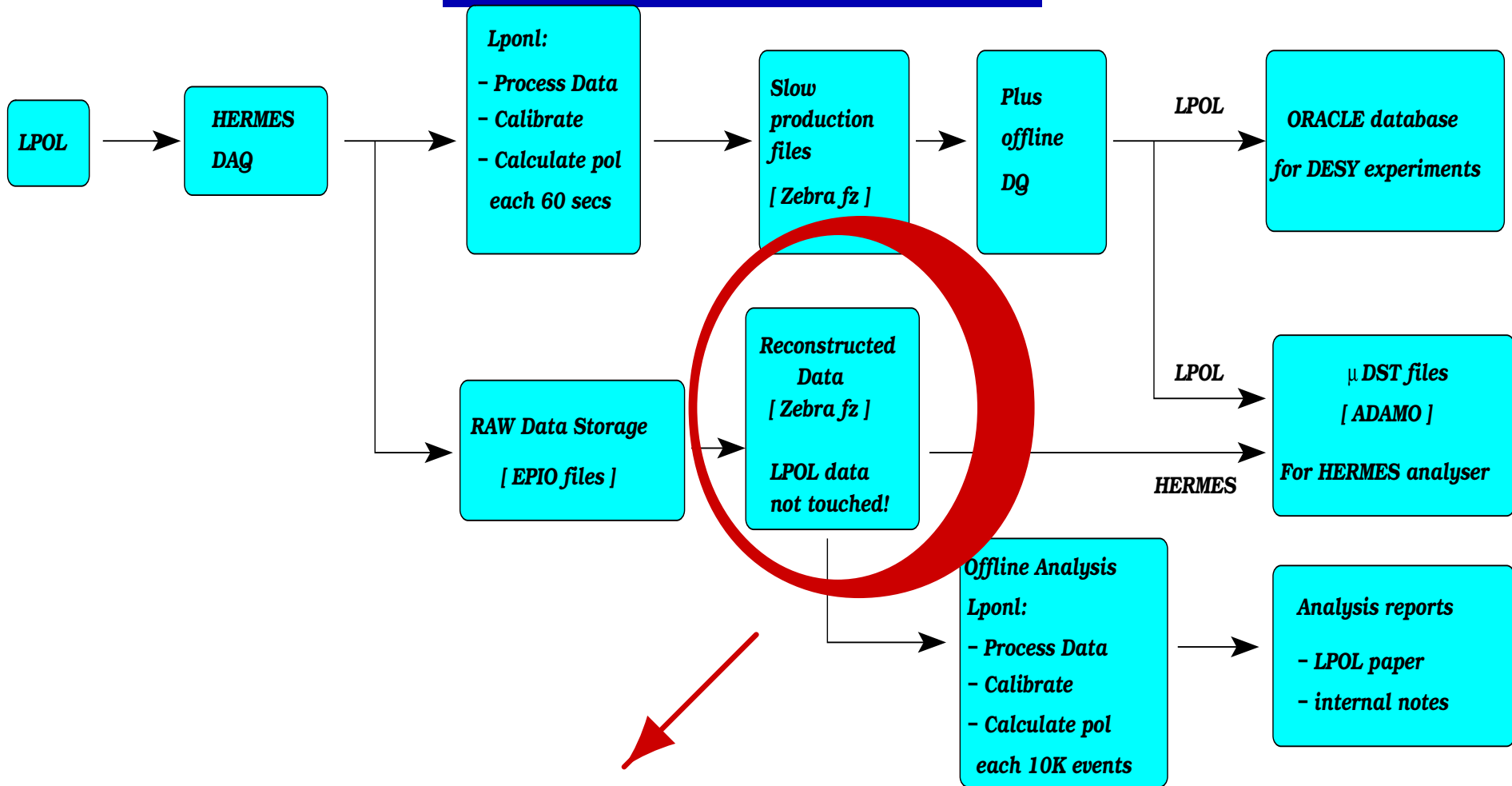


-
- LPOL Data Storage
 - New Format for Data Storage
 - Consistency of the New Framework
 - Additional Feature in Data Reprocessing
 - Required Disk Space
 - Conclusions and Future Plans
-

LPOL Data Storage



LPOL Data Storage



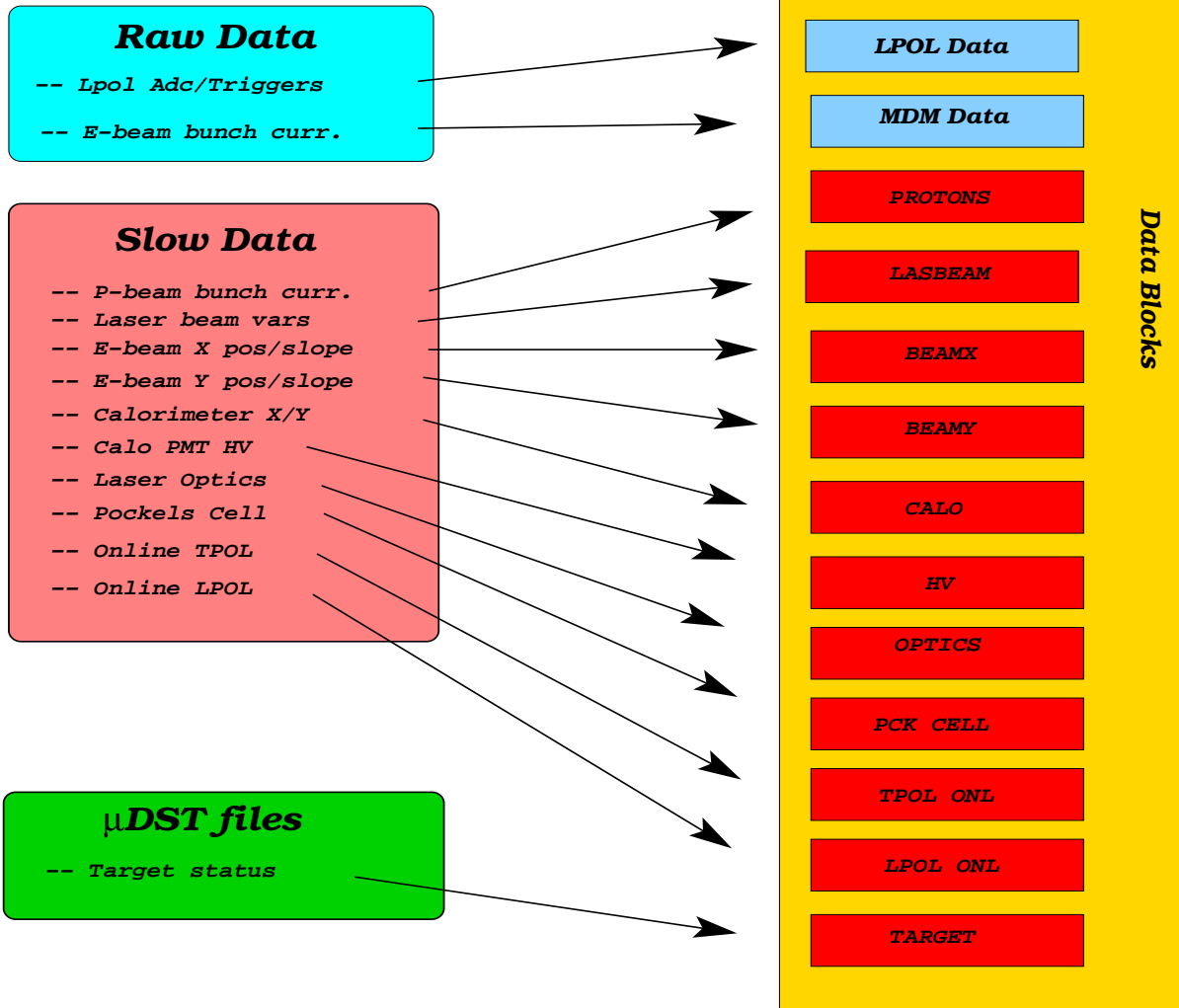
☞ We want to merge LPOL ADC data with beam/HERMES/detector slow and μ DST data into a common storage file (ntuples) to make offline analysis easier to non-HERMES members

New Format for Data Storage

One set of files per HERMES run

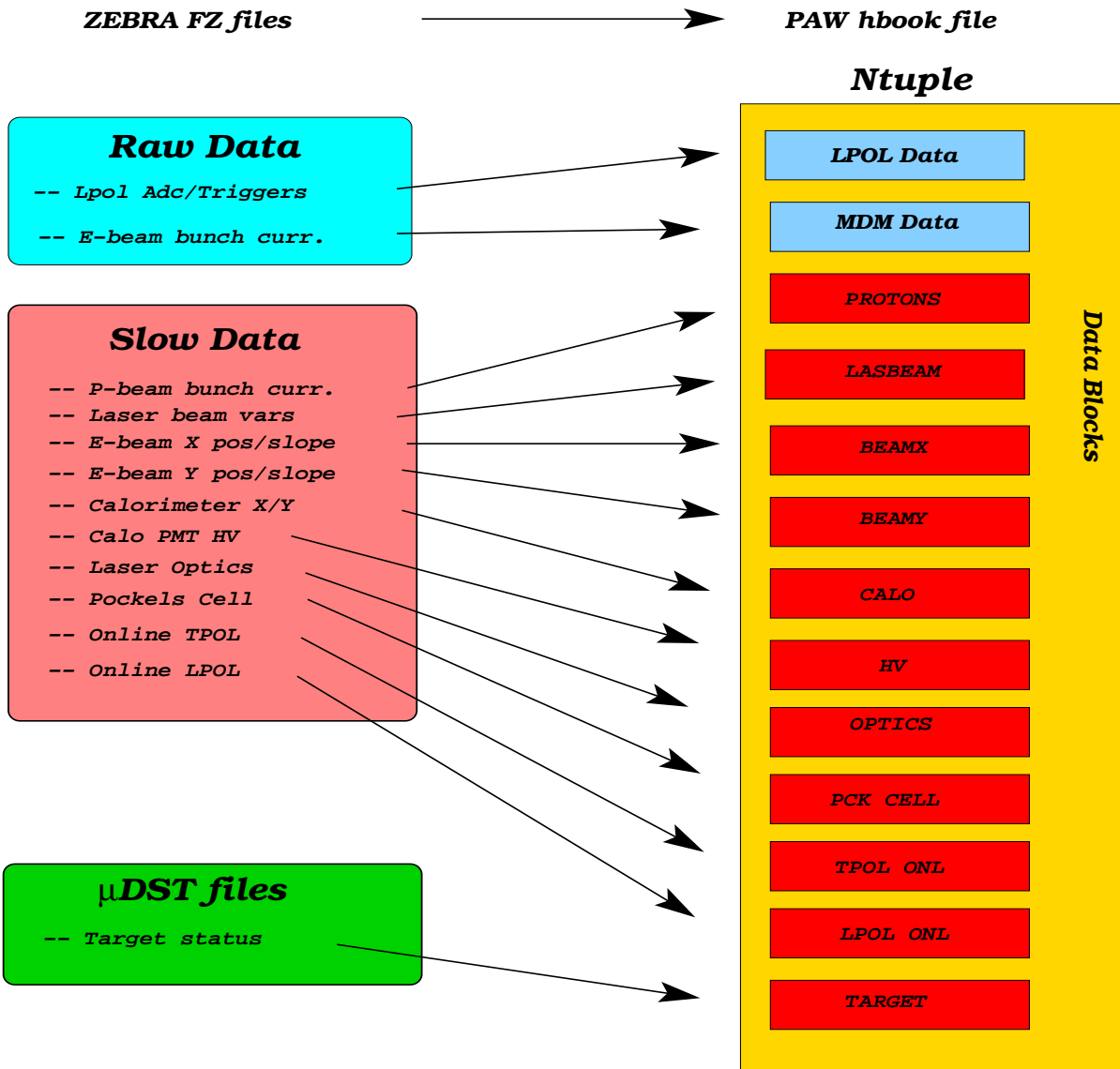
ZEBRA FZ files

PAW hbook file



New Format for Data Storage

One set of files per HERMES run



- Program Lponl should now run over HBOOKs instead of FZ files
- ⇒ code modifications should affect data input processing only

- Processing "LPOL Data" and "MDM Data" var. blocks should provide same results as obtained by processing original FZ files

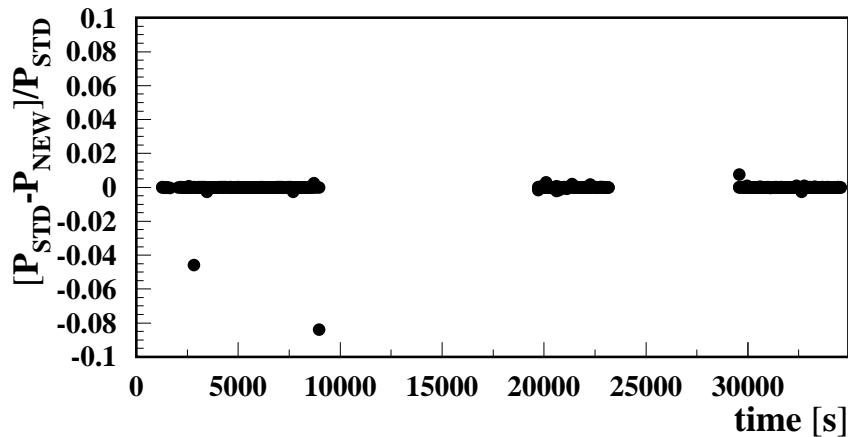
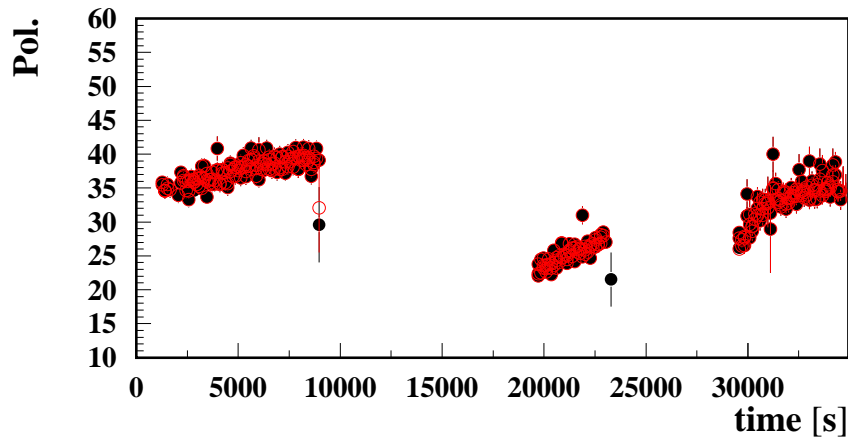
- Non-HERMES user has now easier access to raw data
- ⇒ PAW

- Analysis code now not-linked to specific HERMES libraries as ADAMO

Consistency of the New Framework

● Compare polarization calculated by Lponl program processing FZ and HBOOK files

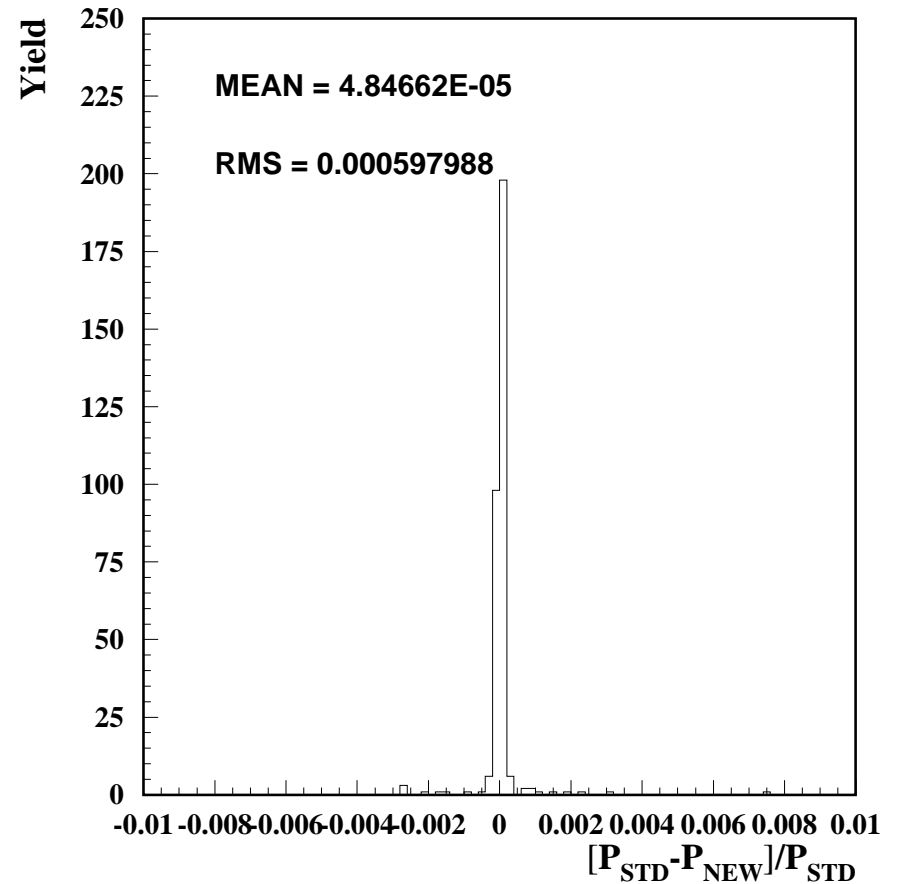
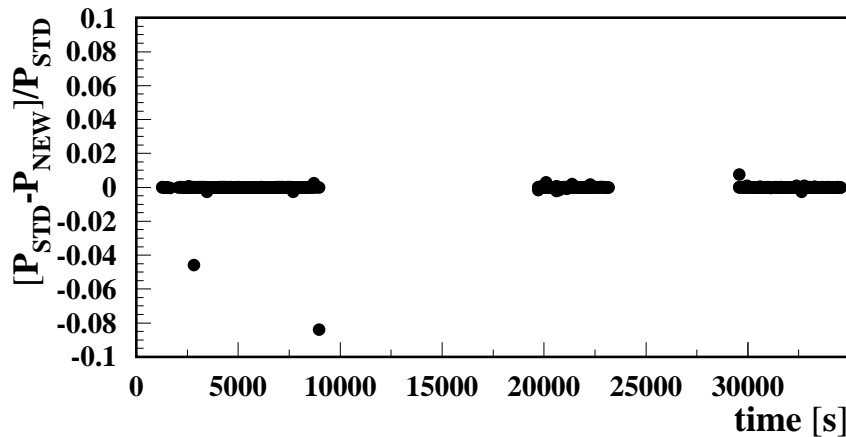
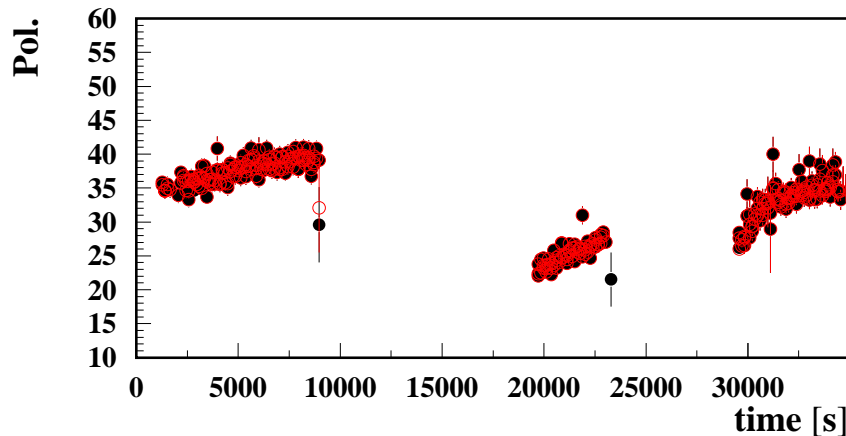
⇒ runs: 41338-41449 ($\approx 400\text{Mb}$), 27-28 Nov 2006



Consistency of the New Framework

- Compare polarization calculated by Lponl program processing FZ and HBOOK files

⇒ runs: 41338-41449 ($\approx 400\text{Mb}$), 27-28 Nov 2006

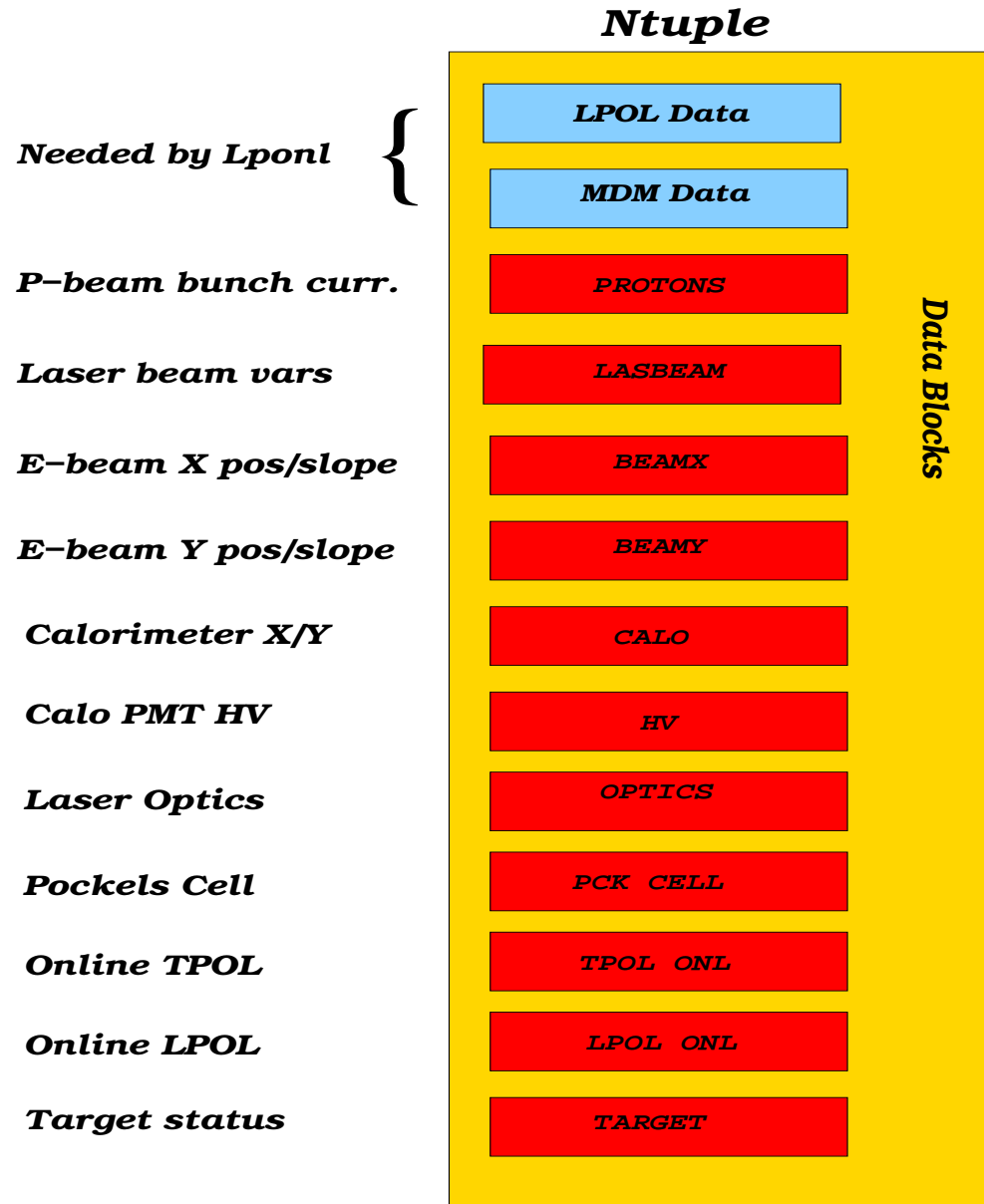


- Although two results do not match yet at 100% level

⇒ agreement is better than per-mill level; enough for a reliable offline analysis!

Additional Feature in Data Reprocessing

- In new HBOOKs additional info is stored with timestamp within time range of LPOL ADC entries



Additional Feature in Data Reprocessing

- In new HBOOKs additional info is stored with timestamp within time range of LPOL ADC entries
- User can perform analysis of correlation between several relevant variables:
 - LPOL vs Beam X position
 - LPOL vs Laser Power/Energy
 - ...

Needed by Lponl

P-beam bunch curr.

Laser beam vars

E-beam X pos/slope

E-beam Y pos/slope

Calorimeter X/Y

Calo PMT HV

Laser Optics

Pockels Cell

Online TPOL

Online LPOL

Target status

Ntuple

LPOL Data

MDM Data

PROTONS

LASBEAM

BEAMX

BEAMY

CALO

HV

OPTICS

PCK CELL

TPOL ONL

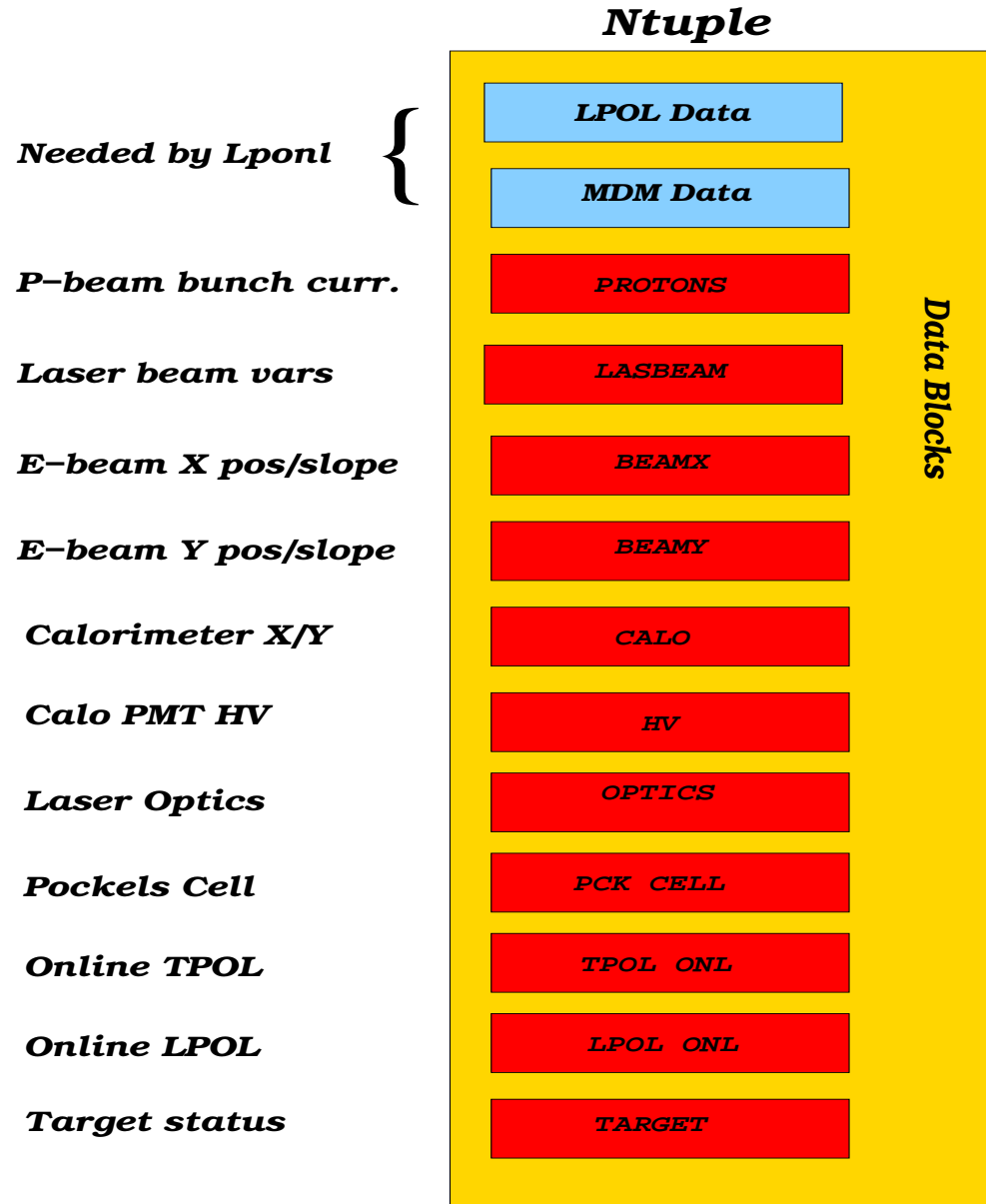
LPOL ONL

TARGET

Data Blocks

Additional Feature in Data Reprocessing

- In new HBOOKs additional info is stored with timestamp within time range of LPOL ADC entries
- User can perform analysis of correlation between several relevant variables:
 - LPOL vs Beam X position
 - LPOL vs Laser Power/Energy
 - ...
- Better, proposal to modify Lpon such to dump into new HBOOK the polarization value and all other vars synchronised with measurement timestamp:
 - ⇒ e.g., closest difference between corresponding timings



Required Disk Space

- Estimate the amount of disk space required to store new HBOOKs:

⇒ one HBOOK (per HERMES run) \approx 4Mb (driven by the LPOL ADC data block)

- 2007: \approx 40K runs * 4Mb = 160K Mb
- 2006: \approx 48K runs * 4Mb = 192K Mb
- 2005: \approx 44K runs * 4Mb = 176K Mb
- 2004: \approx 16K runs * 4Mb = 64K Mb
- 2003: \approx 1K runs * 4Mb = 4K Mb

Total disk space: \approx 500Gb

- Required disk space can be easily got on tape, e.g., [/pnfs/desy.de/tpol/public/LPOL](pnfs.desy.de/tpol/public/LPOL)

Conclusions and Future Plans

- **Reorganization of LPOL data for offline analysis LPOL data at good shape**
 - ⇒ data from different sources combined into common HBOOK files
- **LPOL analysis code (Lponl) can now calculate polarization from new files**
 - ⇒ agreement old/new procedure within per-mill level
 - enough for performing a reliable offline analysis
 - remaining mismatch can be fixed in the future
- **Complete production of new HBOOKs can start**
 - ⇒ Code/documentation should be cleaned/commented & save into agreed repository

Conclusions and Future Plans

- **Reorganization of LPOL data for offline analysis LPOL data at good shape**
 - ⇒ data from different sources combined into common HBOOK files
- **LPOL analysis code (Lponl) can now calculate polarization from new files**
 - ⇒ agreement old/new procedure within per-mill level
 - enough for performing a reliable offline analysis
 - remaining mismatch can be fixed in the future
- **Complete production of new HBOOKs can start**
 - ⇒ Code/documentation should be cleaned/commented & save into agreed repository
- **Implementation of additional features in analysis code ongoing**
 - ⇒ store values per-min values for all relevant vars
 - complementary to what codes now does
 - will make life easier to analyser
 - should be ready within Christmas