

USAGE OF AND REQUIREMENTS FOR GAUDI IN DAYA BAY / LZ

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Dayabay

- Measured θ_{13}
- Based 50 km outside Hong Kong at a nuclear power plant.
- Three separate experimental halls.
 - Each has a large water pool
 - Two halls have two anti- ν tanks
 - The other has four.
- Readout of all pools and tanks are independent.



Dayabay case study



- Data taking for first $\theta 13$ measurement.
 - 54.8 days
 - 18186 files (16065 physics)
 - 16 TB, effectively 3.5 MB/s
- Prompt Processing, 0.67 GB/hr
 - 23.5×10^3 core hours (980 days)
- Production Processing, 0.9 GB/hr
 - 17.5×10^3 core hours (730 days)
- 20 days between close of last file and submission of paper.

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- Direct dark matter detection experiment.
 - Base at SURF (Sanford Underground Research Facility) in South Dakota.
 - 7 tonne TPC of Xenon surrounded by liquid scintillator.
 - Detector read out in single unit
 - Events may be spread over two readouts.

Usage

- In Dayabay Gaudi is the the foundation of **nuwa**, which is used:
 - “Keep Up Production” (KUP)
 - Spallation Neutron skimming
 - Full (re)processing of the entire data set.
 - Simulation
- Outputs from these are ROOT files.
- LZ is expected to use Gaudi in a similar way as the foundation of **LZap**.

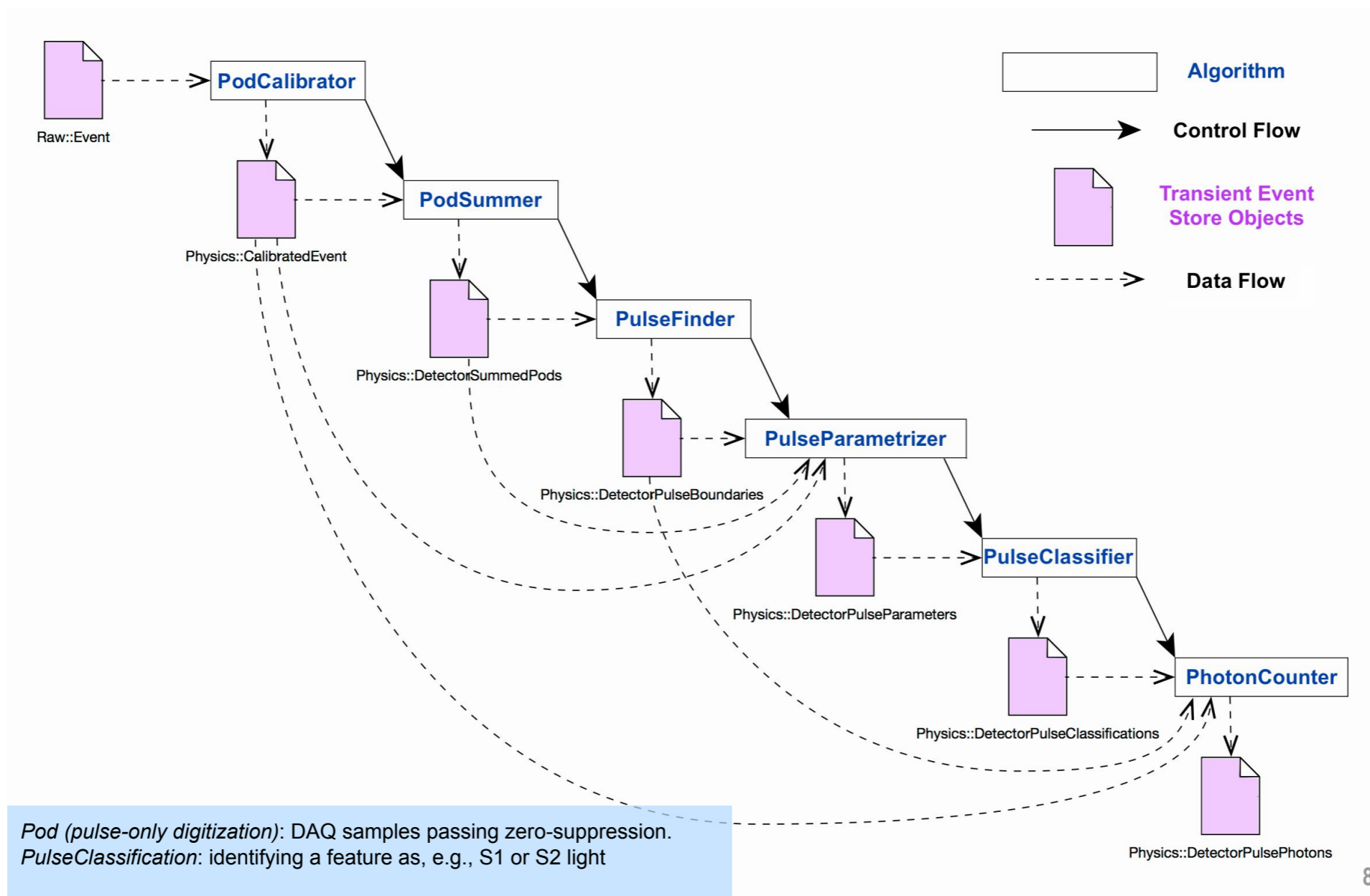
Requirements

- Currently use
 - python configuration files.
 - C++ and python algorithm definitions.
 - sequential algorithm processing.
 - outputs to both Histograms and Ntuples.
- Must be able to continue support for:
 - Archive Event Store.
 - DBI conditions access.

Example LZ Sequence



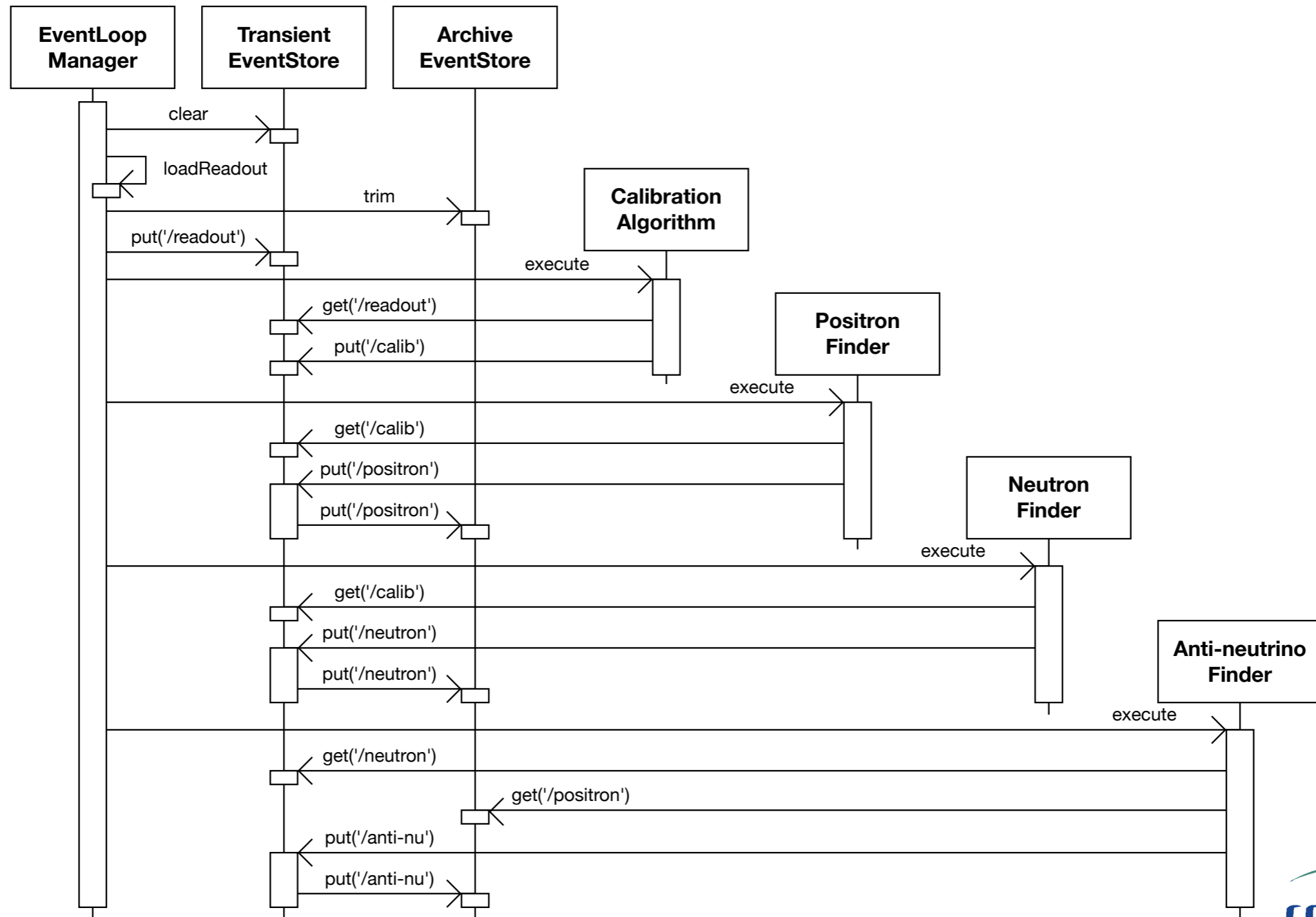
LZAP modules in Feb. integration release



Archive Event Store

- Archive Event Store is a set of time order collections of selected DataObjects placed into the Transient Event Store by previous events.
- Used to create a single physics interaction that spans multiple readouts.
- The collections are ‘trimmed’ by a specified time window at the end of each event loop.

Archive Event Store (II)



- Dayabay is re-using the DBI software from minos as its conditions database access.
- It has its own caching model to provide efficient access to data.
- Need to avoid “thrashing” of this cache.