

LAr Noise Monitoring Software

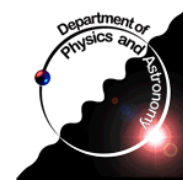
Brief Status Report

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T. Ince, M. Lefebvre, R. McPherson,
R. Seuster, K. Voss



University of Victoria
Physics and Astronomy

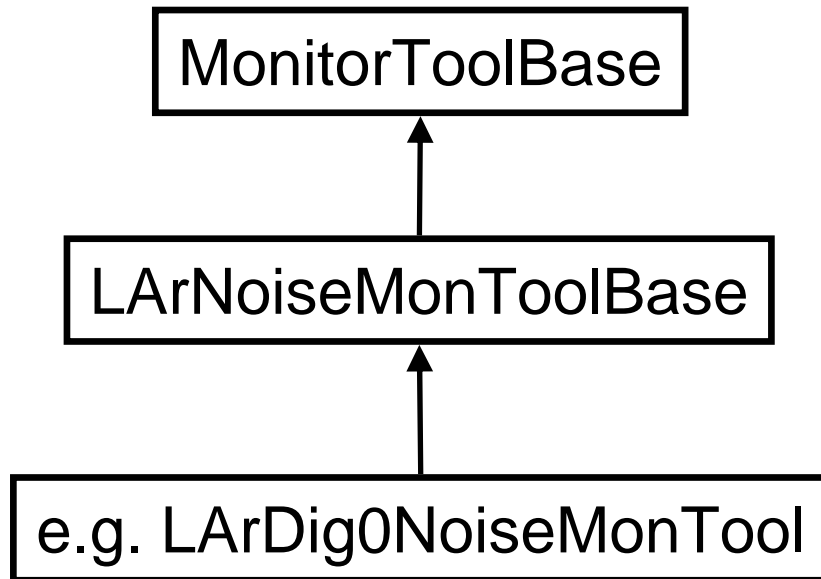


- Although some tools already exist, many are testbeam specific
 - not made for large number of cells to monitor
- Taking a fresh look at noise monitoring
 - needs a new package
 - software designs that avoids code duplication
 - use root!

scope and granularity

- Data to monitor naturally falls into two types:
 - online oriented (“looks at the hardware”)
 - LArDigits, LArCalibDigits, LArRawChannels
 - offline oriented (“looks at the atlas geometry”)
 - CaloCells, etc.
- Start with simple tool design for online oriented data
 - use an online oriented granularity for the histograms: FEBs
 - avoid “atlas geometry” granularity (layer, eta, phi, etc.)
 - monitors noise and correlation for one quantity per channel
 - e.g. sample 0 in LArDigits, energy (or time!) in LArRawChannel
 - correlations between time samples is specific to LArDigits and will need a separate tool

simple (and preliminary) design idea



- implements common code
 - partially implemented
- handles specifics
 - handles loop over relevant objects, here for example LArDigits

- Implementation now started
- We expect the design to evolve somewhat as we implement

histograms

■ configurable

- list of FEBs is given as jobO
- desired histogram types are selected

■ possible histograms to implement:

“value” can be a time sample ADC, a LArChannel energy or time

- 1 per FEB profile histos of average value with rms of value as error bars; 128 bins. (probably not a good idea for all FEBs at the same time).
- same, but channels grouped, say, 4 at a time; 32 bins.
- 1 (or a few) profile histos with one FEB per bin showing the average value over a FEB, with rms of value as error bar.
- simple correlation histograms, for example one 2D histo per FEB with 32 X 32 bins (4 channels per bins).
- etc. ideas??