

ANNIE LAPPD Data Analysis

LAPPD Workshop April 2023

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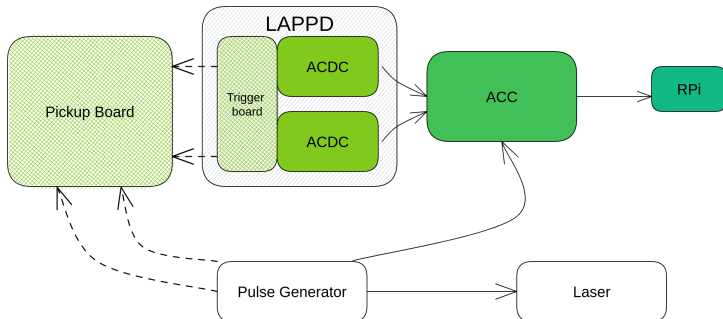
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Experimental Setup

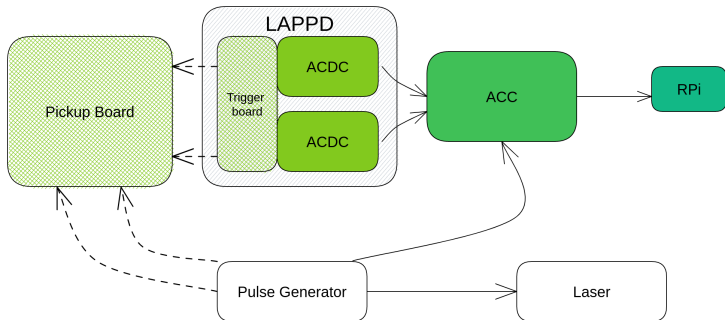
- Data of one LAPPD read out by 2x ACDC cards.
- Each ACDC card has 5x PSEC chips with 6 channels per chip - each channel digitises a waveform.
- Data is read out to an ACC card where it goes on to a raspberry pi for storage.

Experimental Setup



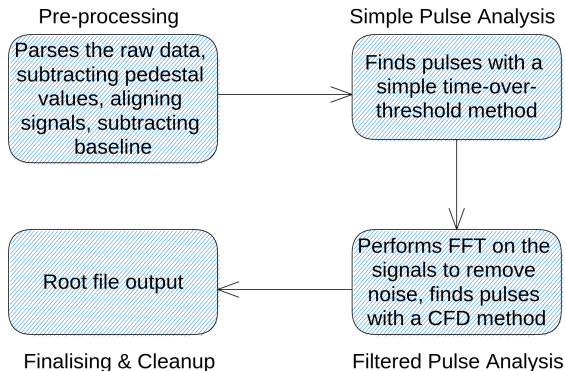
Schematic of the data flow in the dark room setup; dotted arrows are configuration-dependant.

Experimental Setup



Pulse generator drives laser, sends beamgate to ACC, and in externally-triggered mode, sends trigger signals to the pickup board.

The Analysis Toolchain - Overview

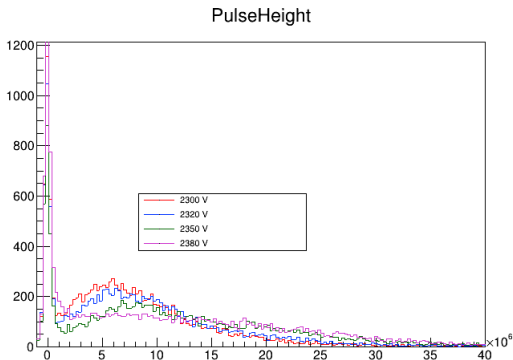


Implemented within the ToolAnalysis software framework

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Example of outputs - LAPPD 63 Voltage Scans



- Similar peaks shown in the dimensionless gain variable.

Next Steps and Takeaways

- The ANNIE LAPPD test stand is good for training newcomers and students.
- Modifying these analysis tools to be used on data coming from deployed LAPPDs:
 - Changing the output format to match the overall ANNIE data format,
 - Hit-building from tank data as opposed to laser data,
 - Using LAPPD information with other subsystems (e.g. PMTs, muon range detector).
- Replicated ANNIE expertise and lessons learned to bring to the UK.

