

Converting the PMT Container Testing Raw Data to ROOT File Format

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Outline

- ① converting raw data to root file
- ② update of container test results
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- ⑤ Summary

motivation

- 1 The Raw data of PMT testing is significant for the evaluation of PMT performance.
- 2 **While,Currently, the raw data of container system is not well organized and it is not convinient for people to get a quikly access.**
- 3 It is useful to convert all the testing raw data to ROOT format.
 - decrease the file size
 - easy to analysis and manage.
 - shadow the hardware details.

requirements

- ① store the raw waveform data(.1pe, 1pe, TTS).
- ② store the auxiliary testing information(container , mass, HV, DCR. etc).
- ③ easy to manage (create, modify and update) and analyze.
- ④ one can acquire almost all the data needed for analysis(of one PMT) from only one file rather than collecting the details from server.

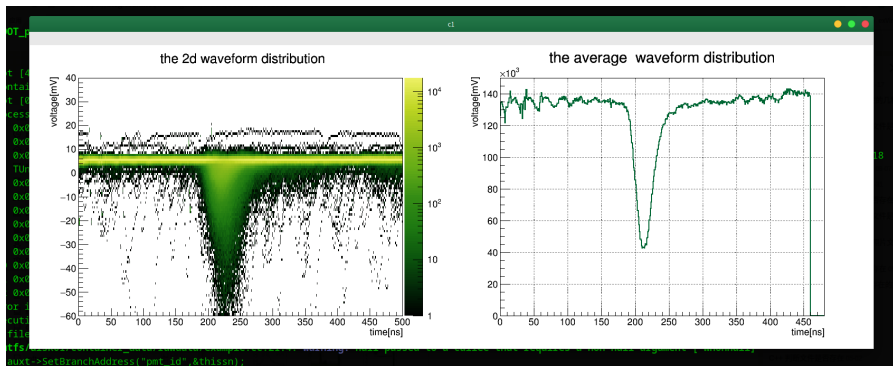
prliminary file structure and strategies

- each PMT have one root file named in "SN_rawdata.root"
- In a specific root file, we have several waveform waveform trees and a auxiliary data tree
- if one PMT go through several tests in the container, all the data will be saved still in only one root file but with different name of wave trees¹; their auxiliary information will be filled several times in the same tree.



restore the waveforms

all the aveforms were stored as a vetor with 521 length, one can easily read and analysis the data, for example :



current states

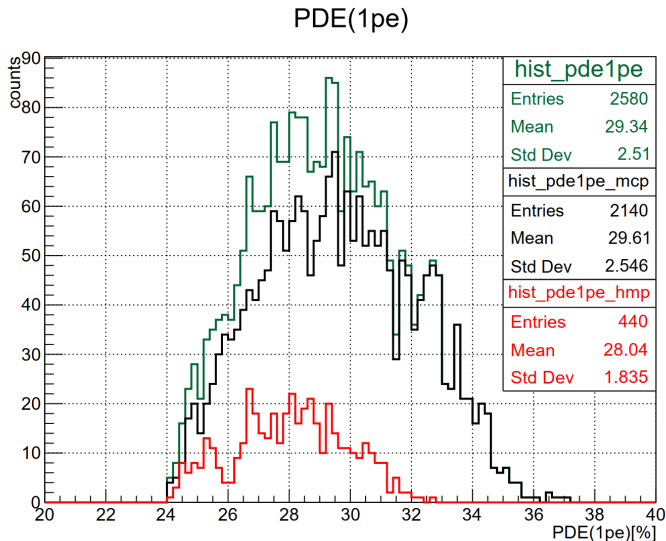
finished:

- basic structure of root file and TTree
- example rawdata root file
- example cpp program to access the waveforms from the generated root file

still working on :

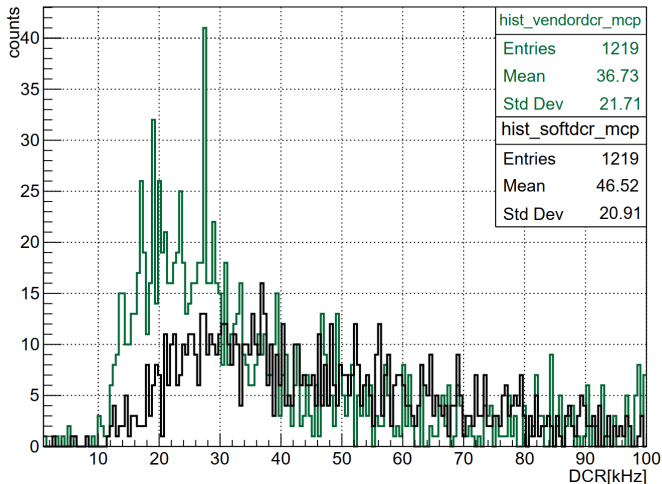
- refine the root file contents and structure
- writing the document for potential users

updates since shanghai colaberation meeting

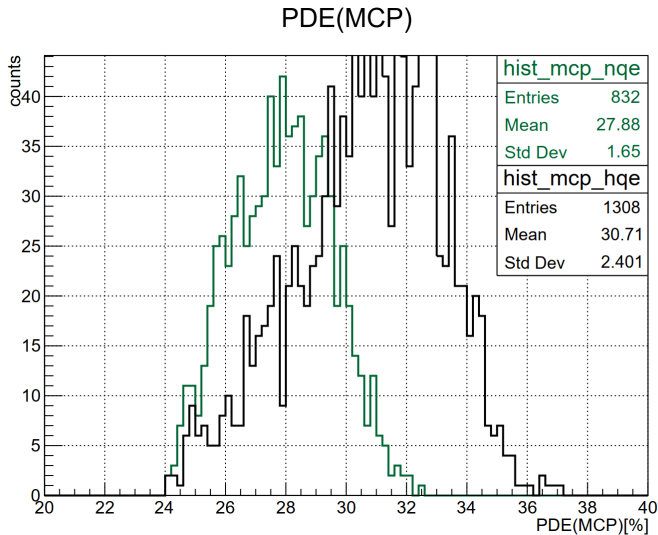


updates since shanghai colaberation meeting

vendor and soft dcr of MCP PMT



updates since shanghai colaberation meeting



summary

- the converting of raw data from binary to root format is almost done
- one can easily restore the test waveforms with no loss of information
- the file size² decrease about 20% after transform³.
- the update of container results

²the total additional disk space requirement for 20k is less than 2T, so this not a problem

³about 50MB for one PMT of one light intensity

THANKS

BACK-UP