Container PMT Testing Data in ROOT format

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introduction

1. Onsite server:login.pmt.ihep.ac.cn [1]
2. raw testing data path: /pmtfs/disk01/container_data/Meassurements_DAQ
3. output ROOT file path: /pmtfs/disk01/container_data/rawdata

[1] https://juno.ihep.ac.cn/mediawiki/index.php/Onsite_computing/IT

inside one ROOT file

one can get 13 trees and one TObject ”Pmtdata”

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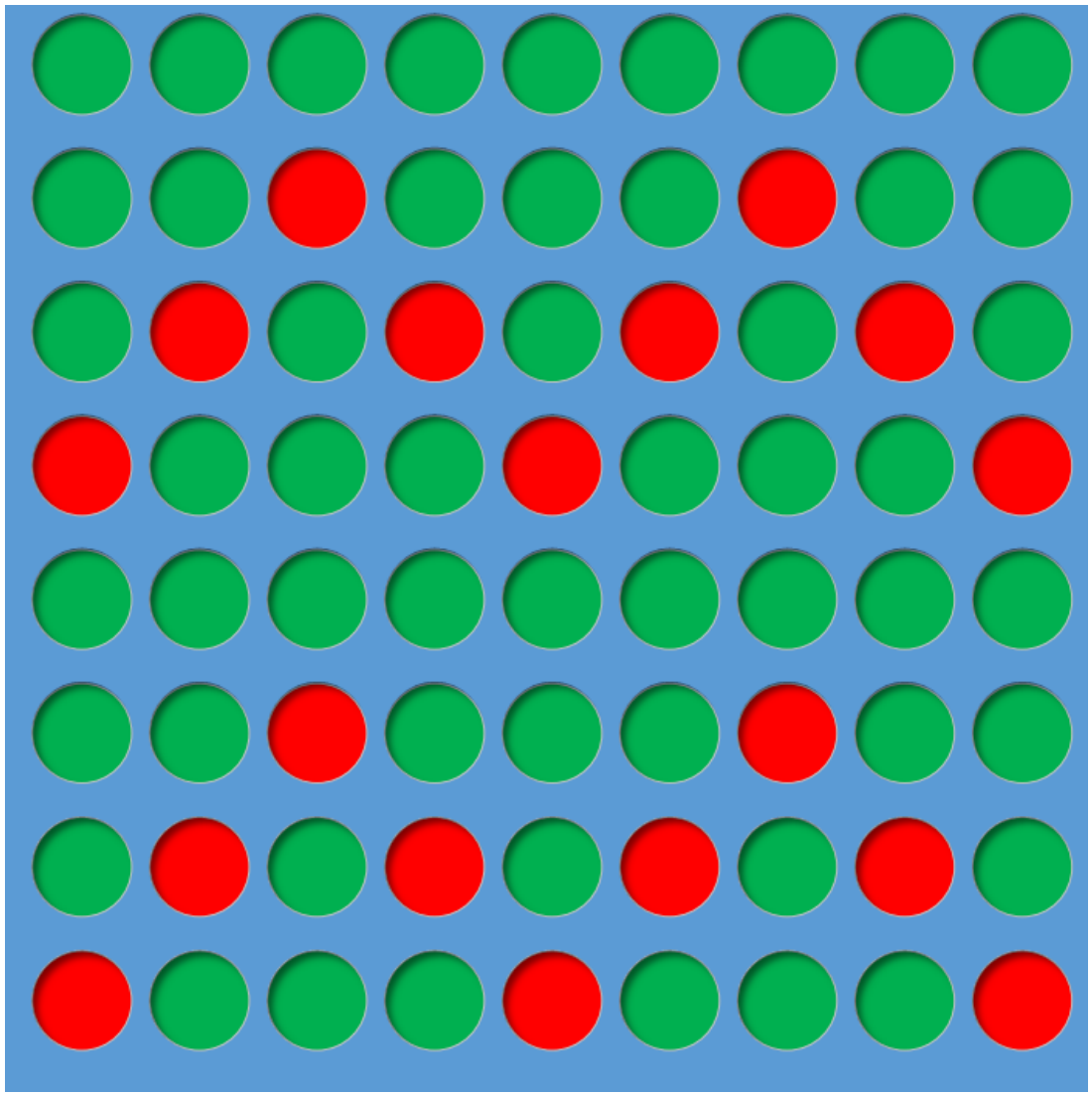
a unique ID indicate the key info

how to calibrate

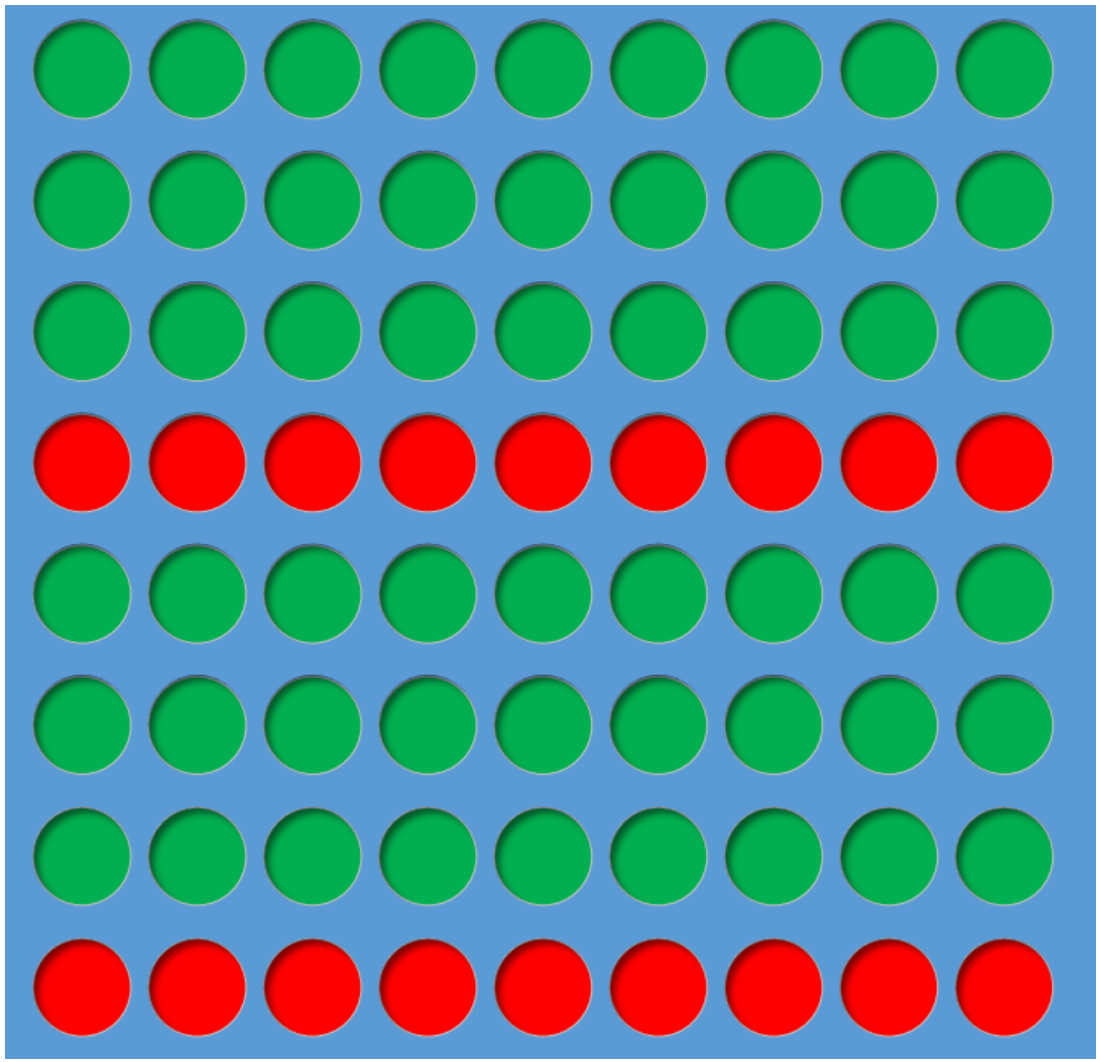
The HAMAMATSU company has provided us with QE value of part of the PMTs, If we suppose the collection efficiency is same for all the HAMAMATSU PMTs we could use these QE values to calibrate drawers in the container.

In order to make sure the PDE-μ_{test} fitting results reasonable, only the PMT pass the test will be used for fitting.

fitting example using 30 tubes



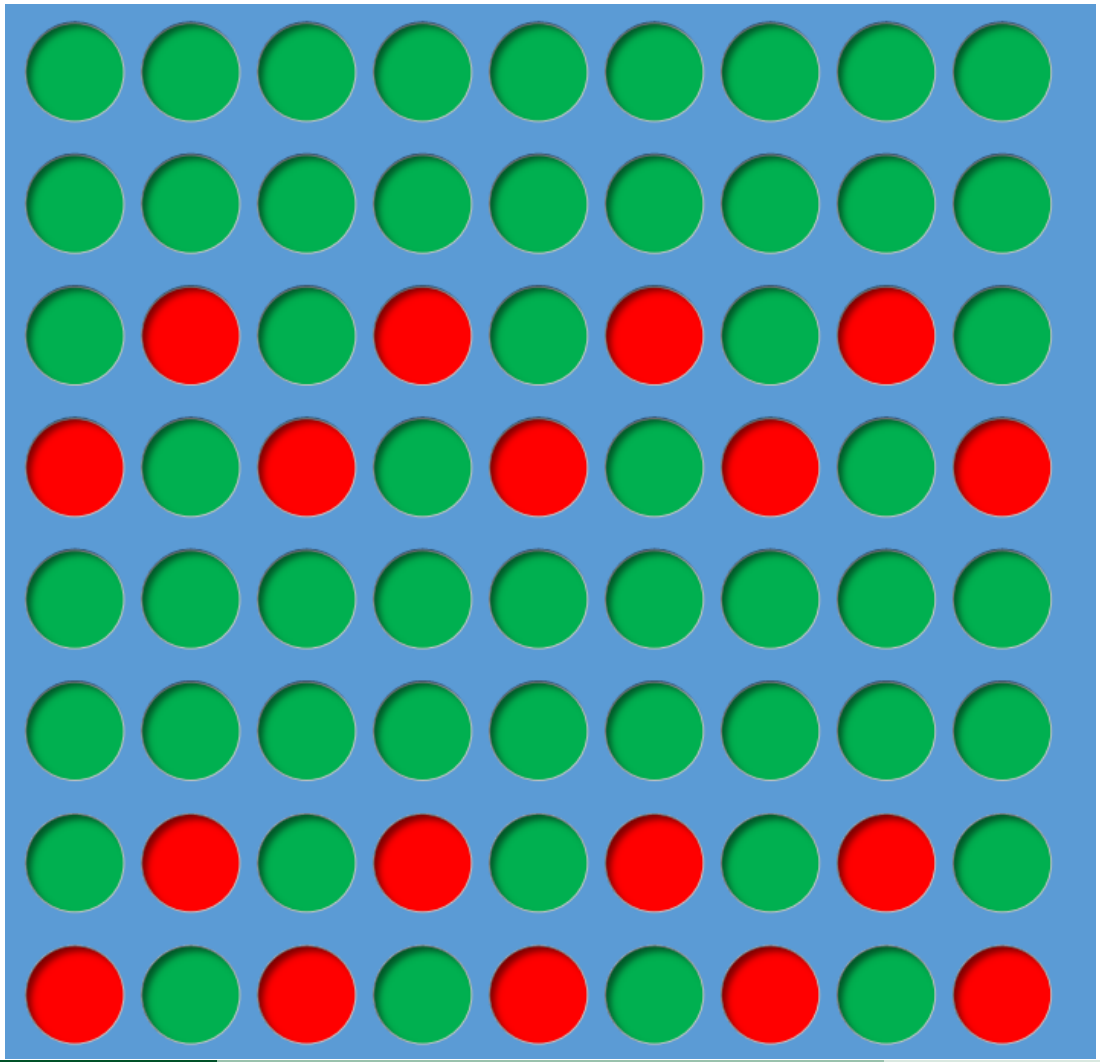
drawer_{factor} vs. PMT number drawer



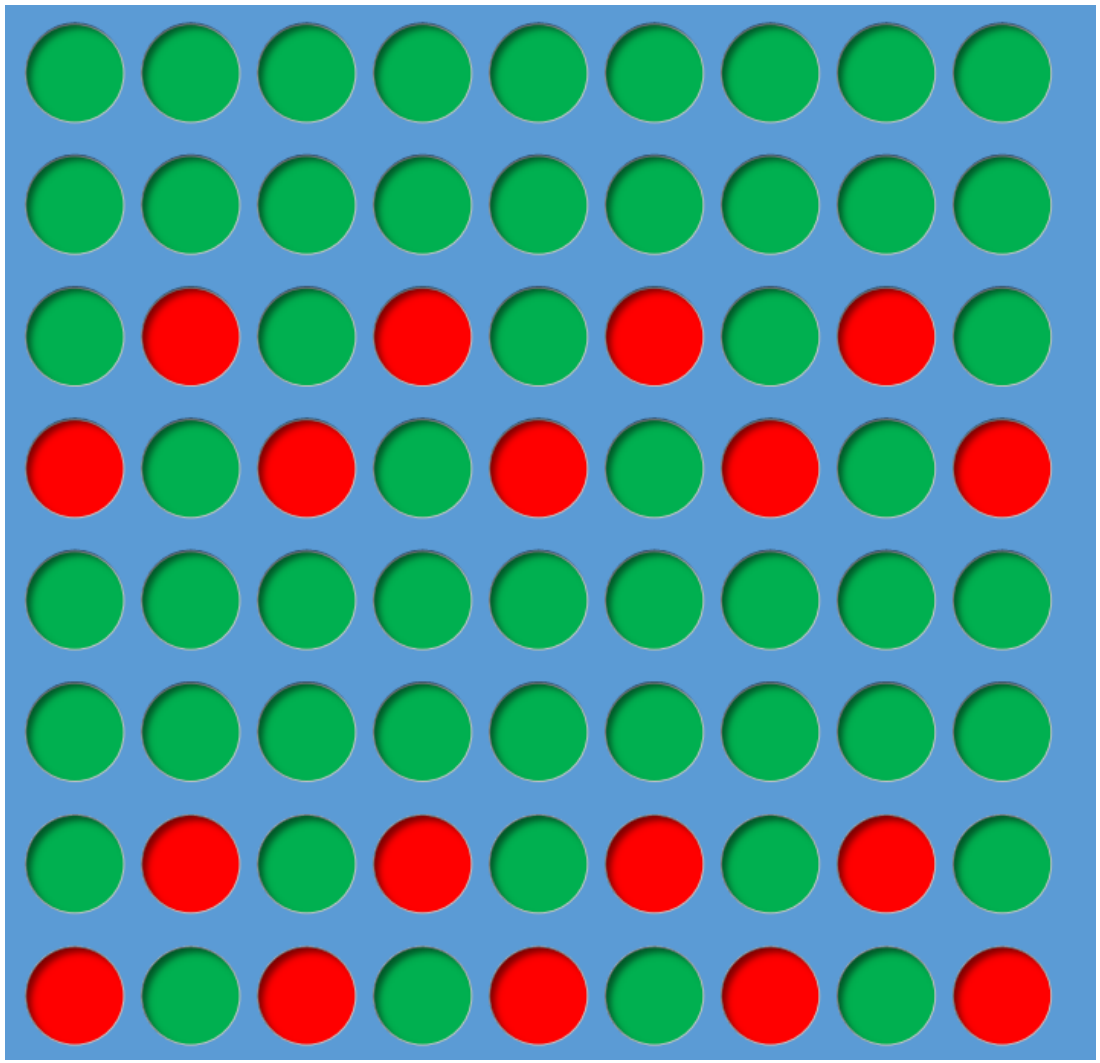
more results can be found in the back-up part.

discuss the results

the relative error $e_r = \frac{f_i - f_r}{f_r}$ of one draw:



discuss the results



This means we need to calibrate each drawer with at least 30 PMTs to

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compare detector performance with the different PMT paterns, especially the time and energy resolution and reconstruction results.

how to:add method to the PMT class then each PMT can get its performance according to the layout pattern and its own ID.

HAMAMATSU PMTs

the PDE uniformity of HAMAMATSU PMTs are not so good
we can artificially correct the PDE if these PMTs have fixed orientation and we can extract the light incident angle using reconstraction information.

Thank You