PDS time stability

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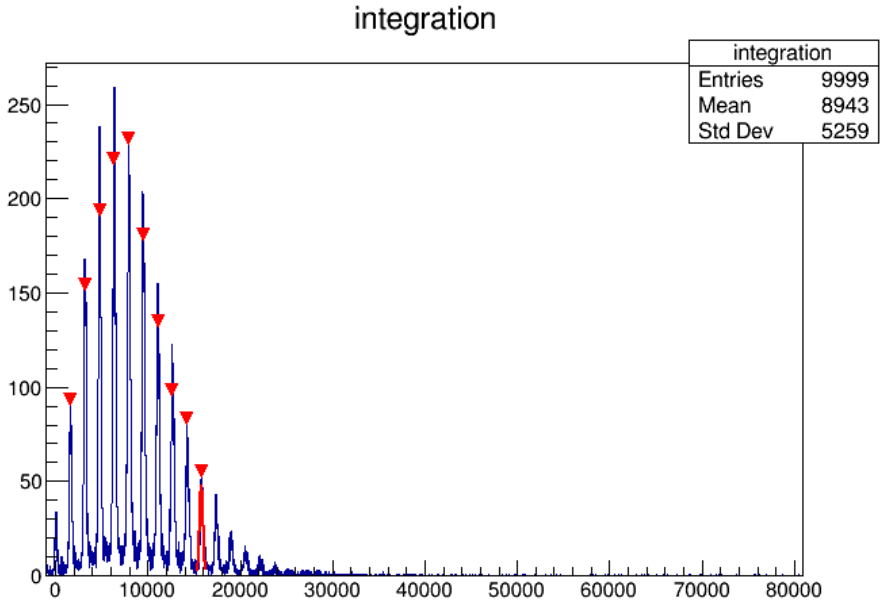
Analyzed runs

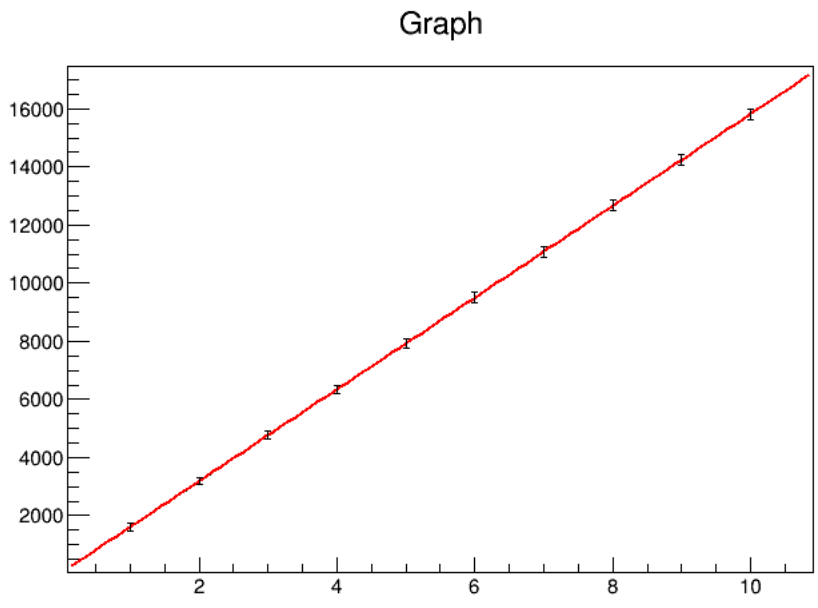
# Run	HV (V)	Bias	Pulse Height	Date
6800	180	Nominal	689	13/02/2019
6846	180	Nominal	689	20/02/2019
6948	180	Nominal	689	04/03/2019
7218	0	Nominal	689	19/03/2019

- Calibration of SensL channels
- Gain vs Time
- Light collection vs time

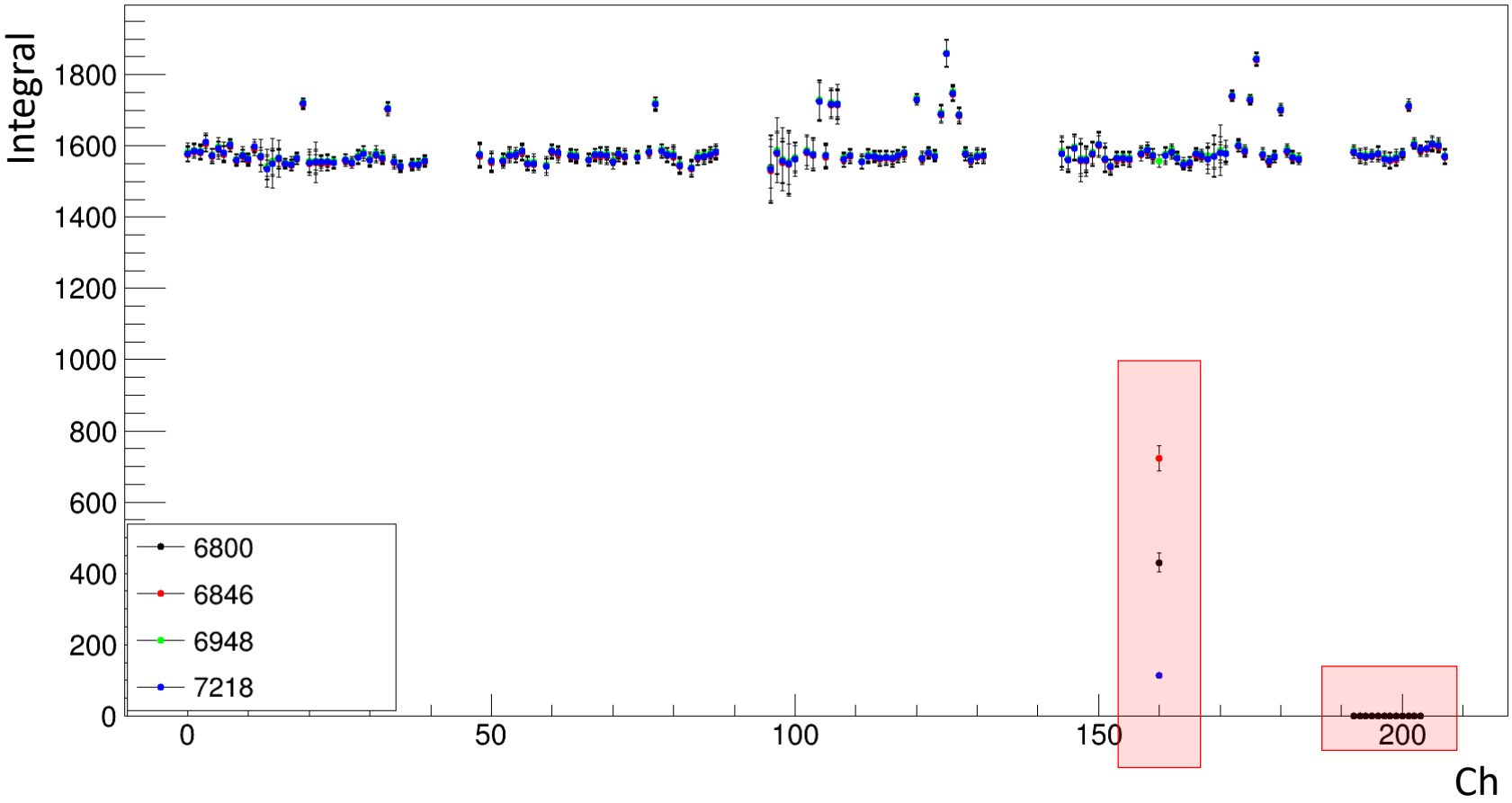
SensL channel calibration

- Taking distributions of SER from preprocessed data
- Peak finder giving photo-electrons peaks as much as possible
- Linear regression to find out calibration

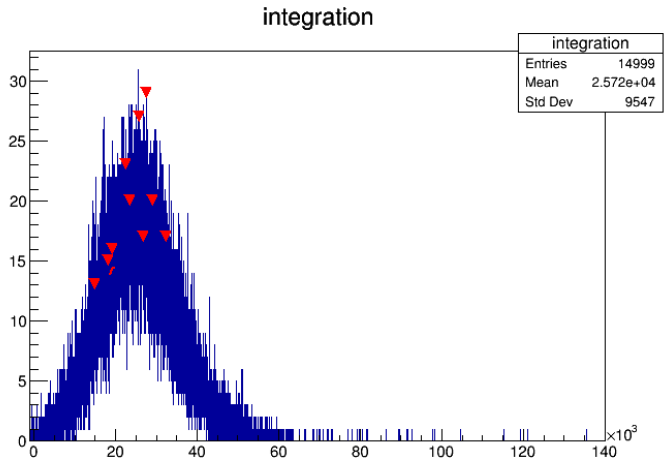




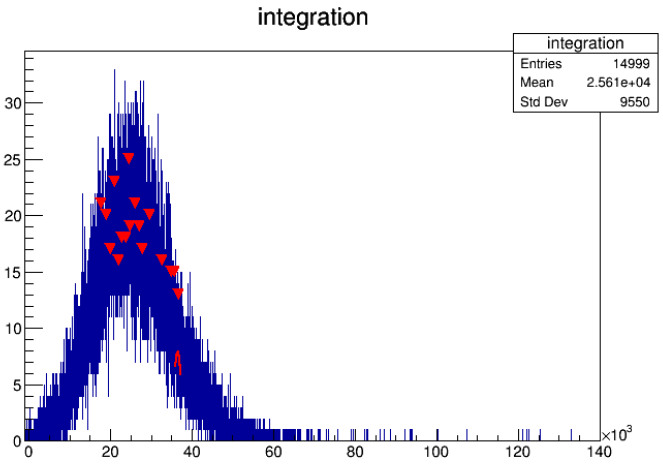
Gain


Integral
1800
1600
1400
1200
1000
800
600
400
200
0
0
50
100
150
200
Ch
6800
6846
6948
7218

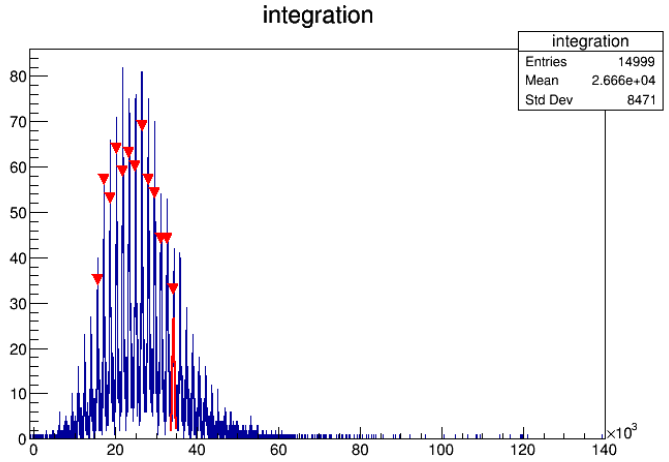
Channel 160



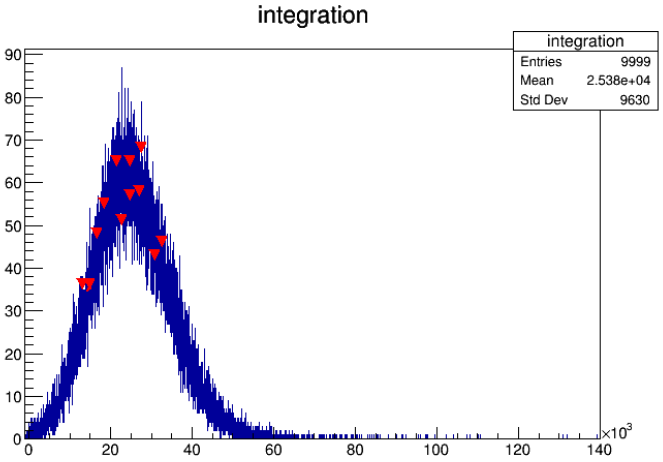
6800



6846

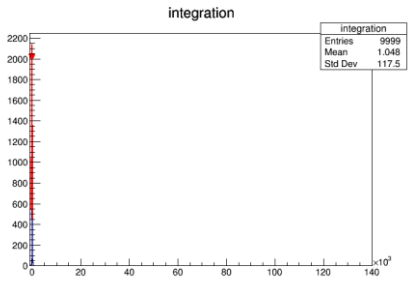


6948

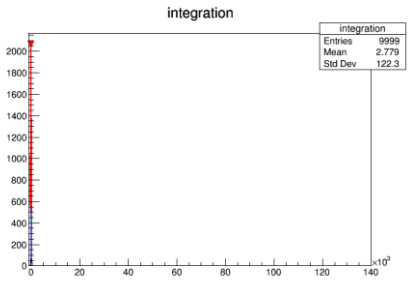


7218

Run 6800



192



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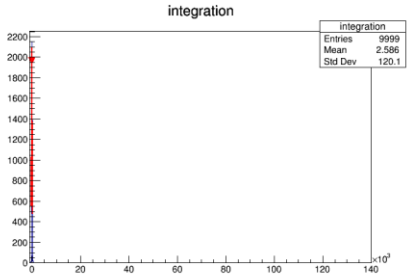

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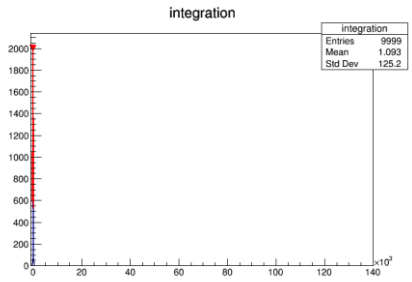

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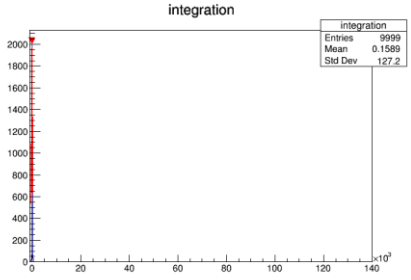

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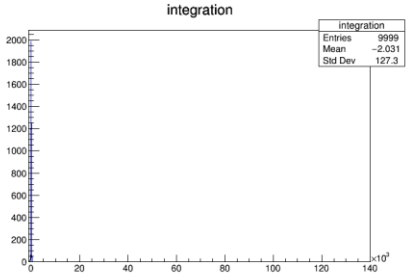

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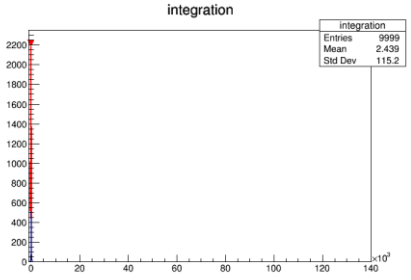

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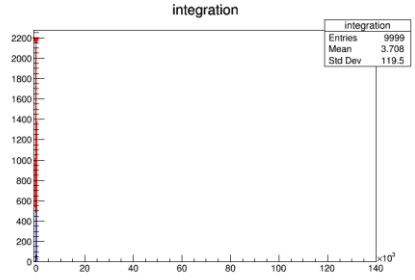
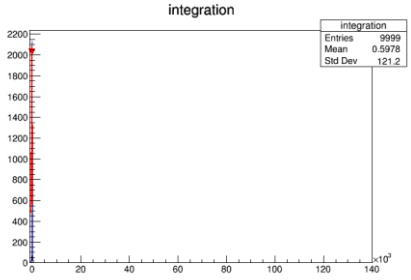


199



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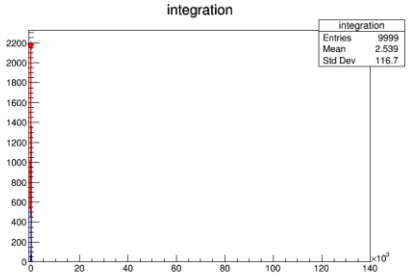

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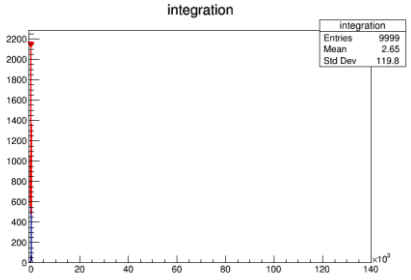
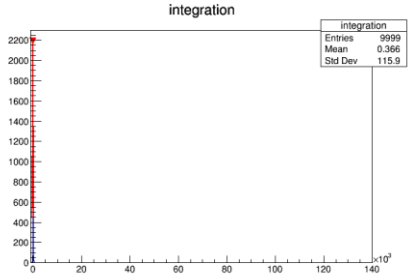
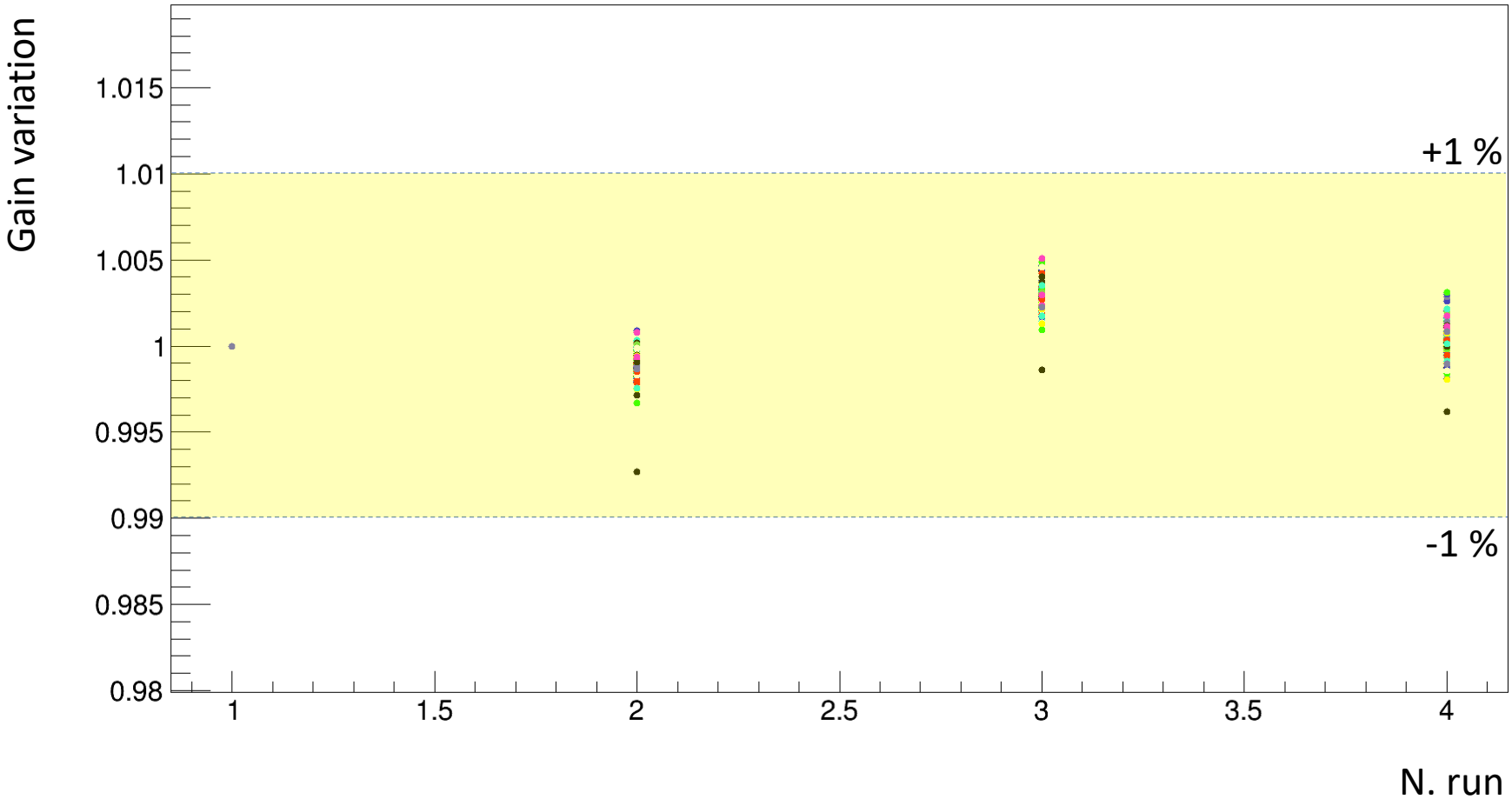


202



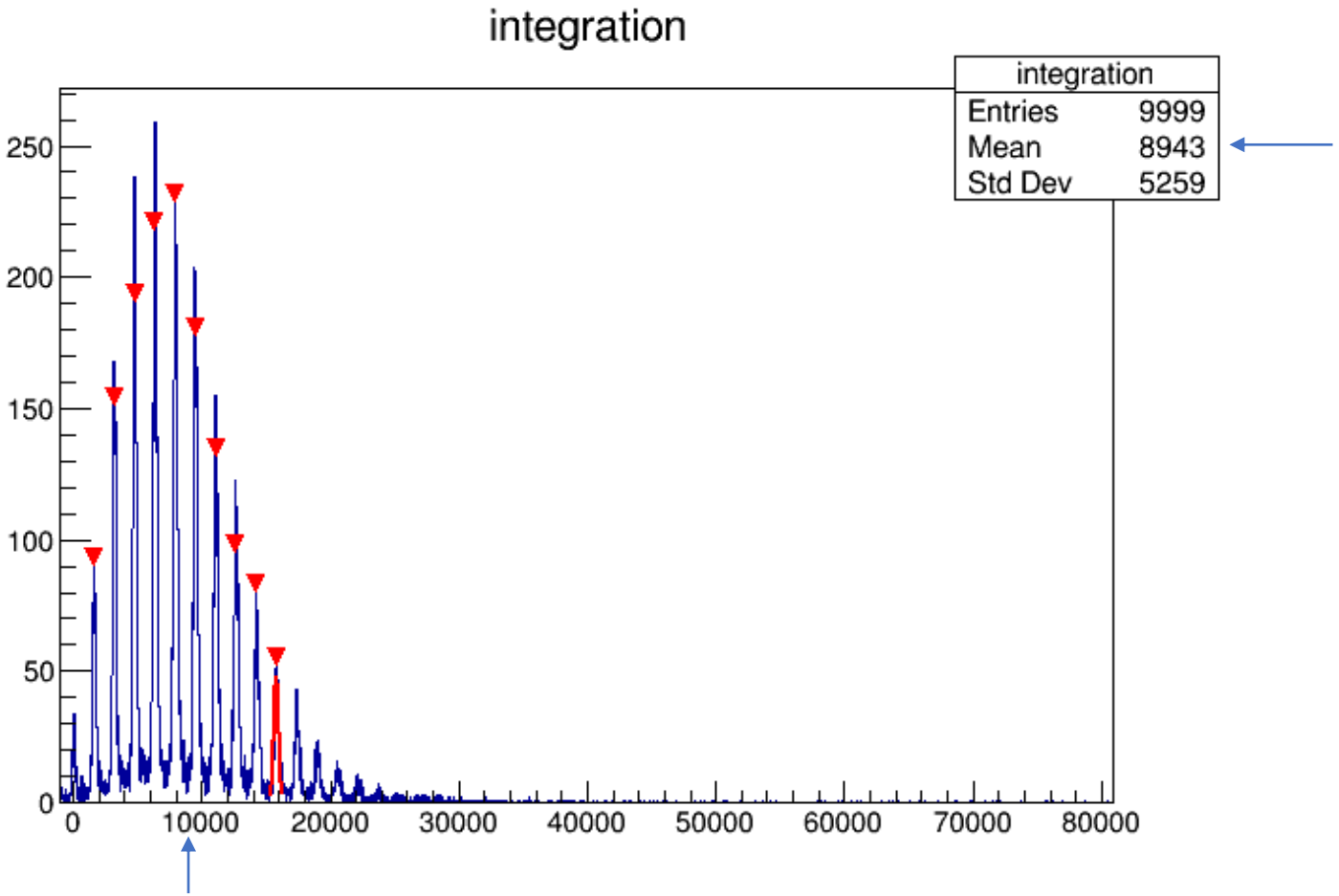
203

Gain vs time

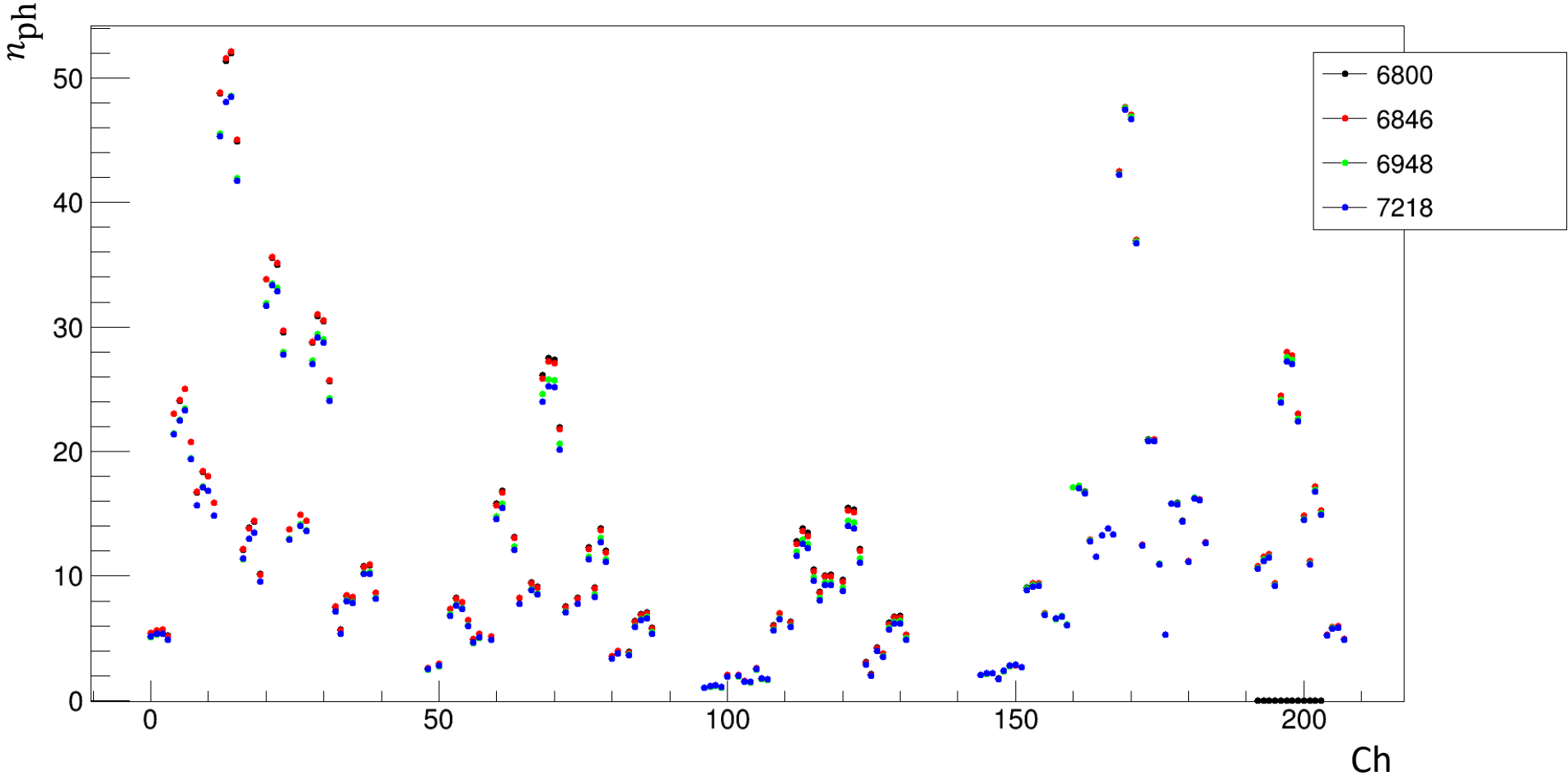

Gain variation
1.015
1.01
1.005
1
0.995
0.99
0.985
0.98
+1 %
-1 %
1
1.5
2
2.5
3
3.5
4
N. run

Light collection

- Average number of incoming photons used as parameter
- $n_{\mathrm{ph}} = {}^{\mathrm{Mean}}/_{\mathrm{Gain}}$



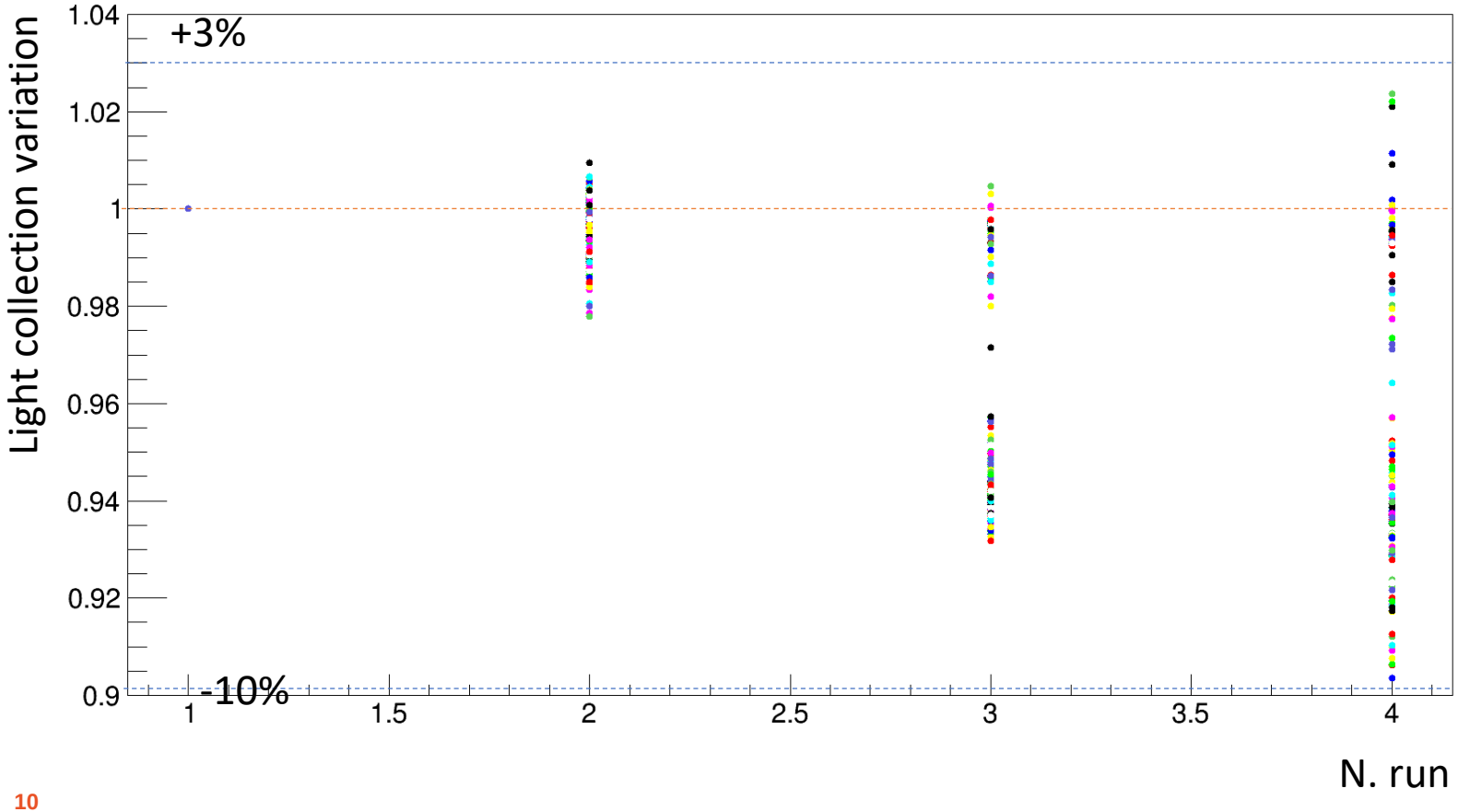
Light collection



Light collection

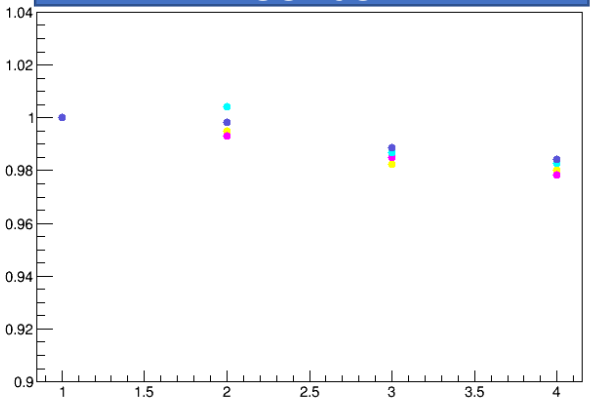
- The light collected shows differences between runs
- Let's consider the ratio:

$$r = \frac{n_{ph}}{n_{ph}\text{of } 1^{st} \text{ run}}$$

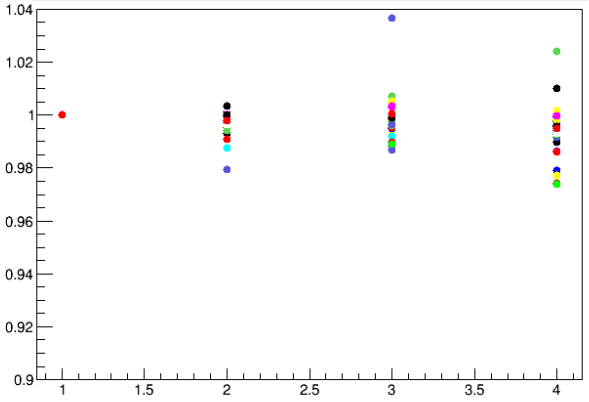


Light collection

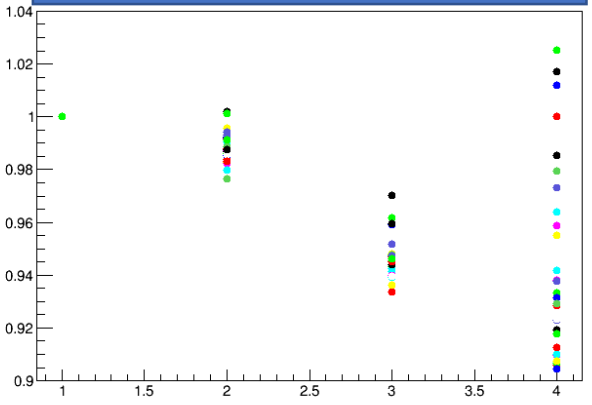
USDaS



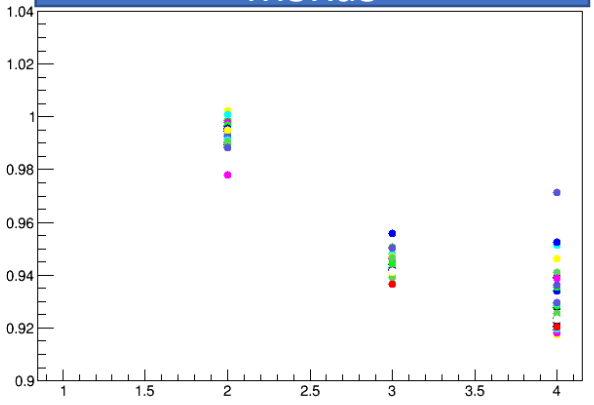
DSDaS



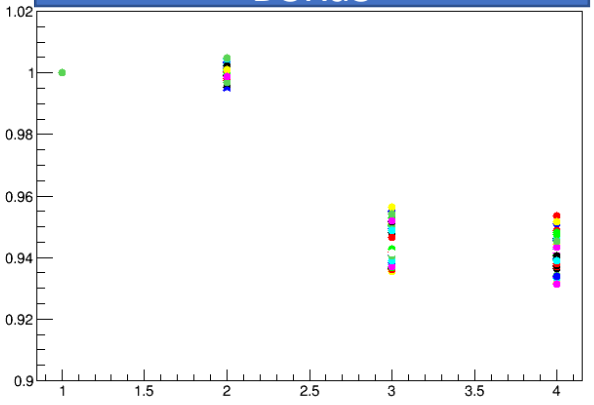
USRaS



MSRaS

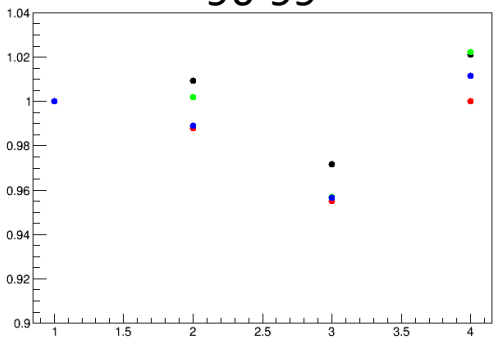


DSRaS

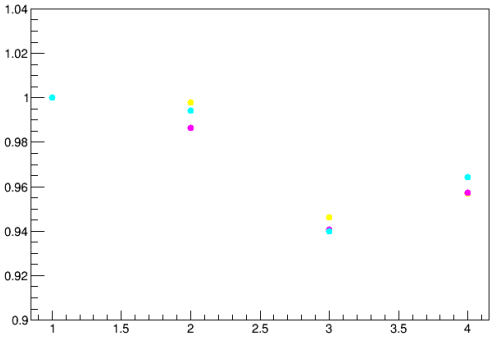


USRaS

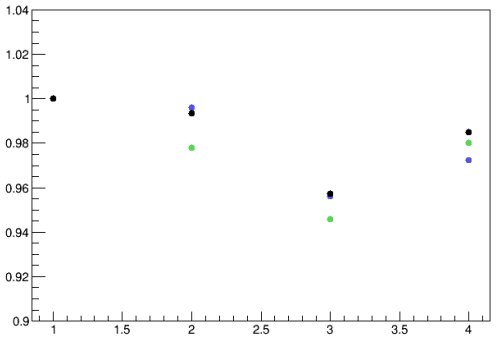
96-99



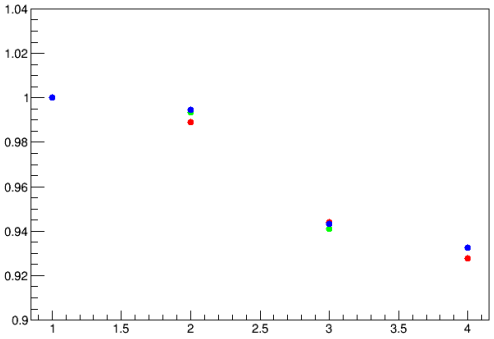
100-103



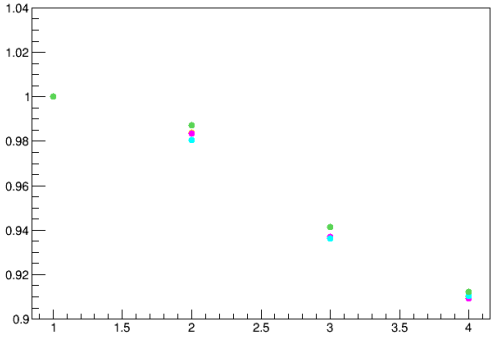
104-107



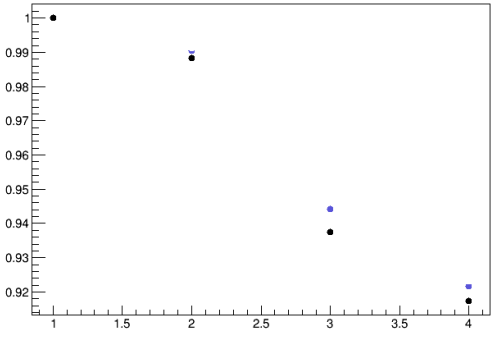
108-111



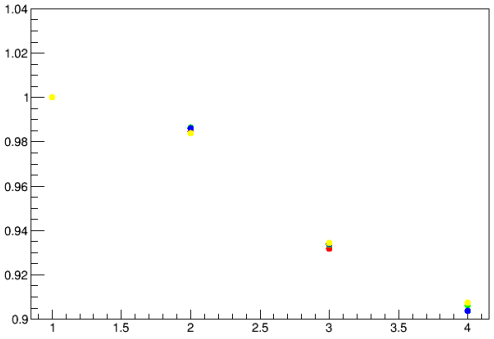
112-115



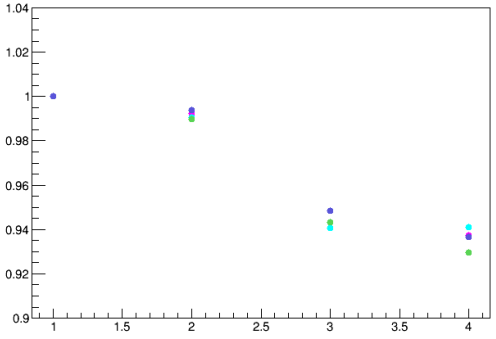
116-119



120-123



124-127



128-131