

# MaPMT(H10966) test updates

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# OutLine

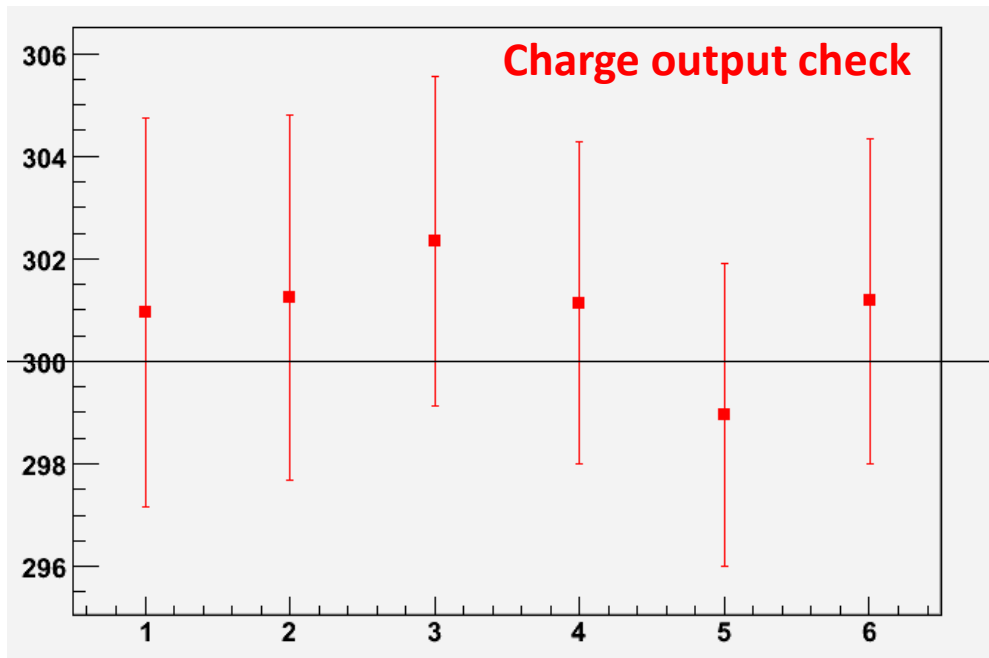
- QDC calibration
  - Gain uniformity between channels
- Uniformity test
- Cross talk

- QDC calibration:
  - To check the gain uniformity between channels

# QDC calibration strategy

- Charge generator: Philips 7120
  - Designed for charge/gate calibration
  - Fast PMT signal with certain charge
  - Two Maximum range: 300/600 pC
- Charge measurement: using Scope

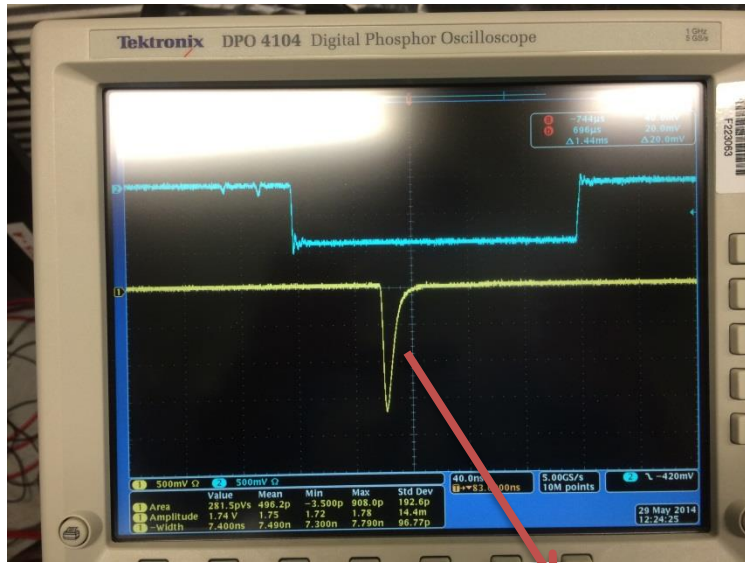
Charge measurement by  
scope (pC)



Different measurements

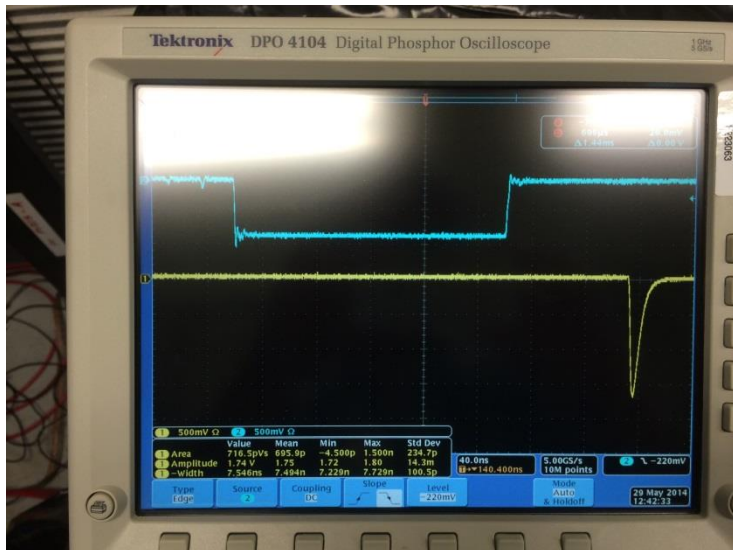
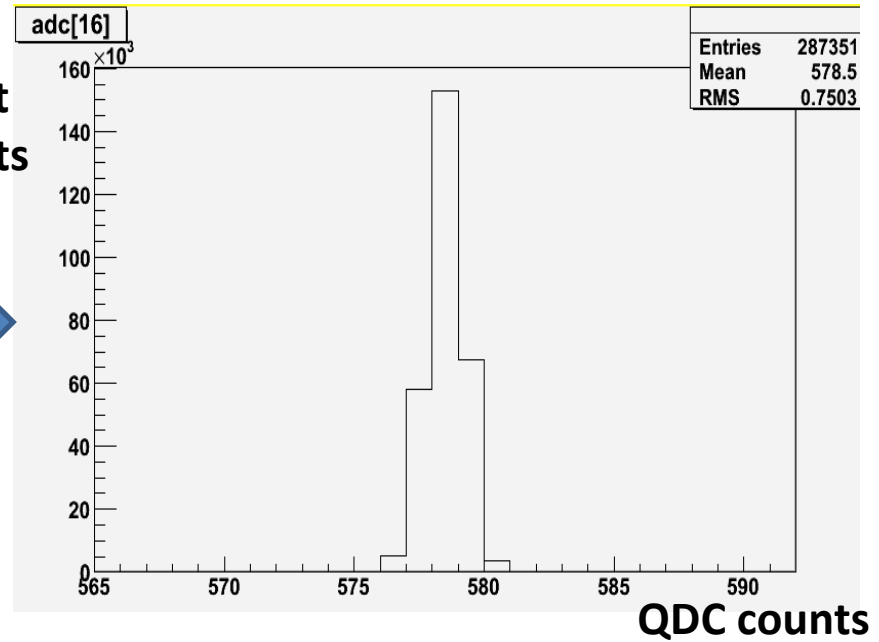
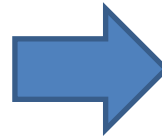


# Signal and pedestal run for QDC

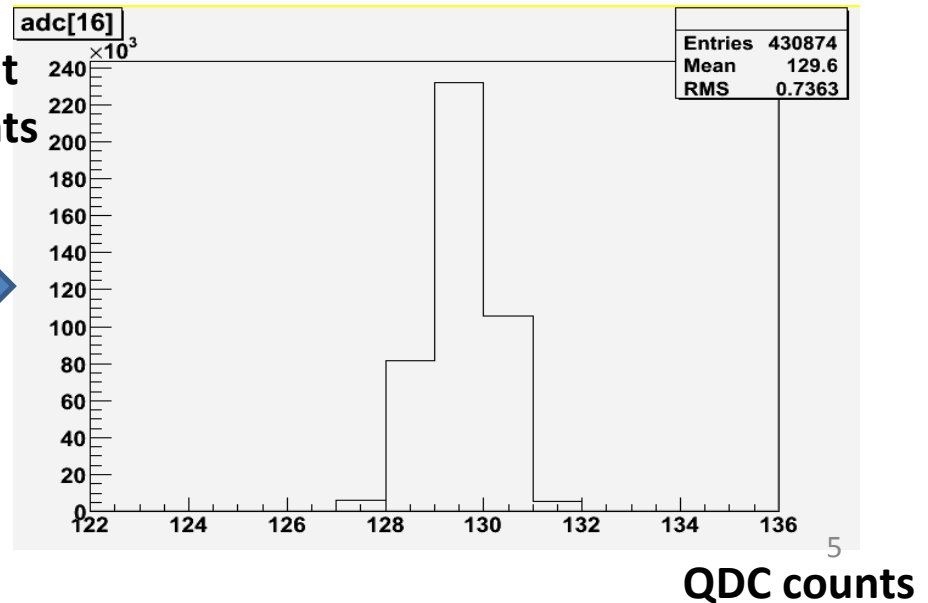
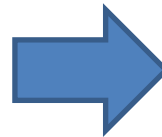


Pulse from Philips 7120

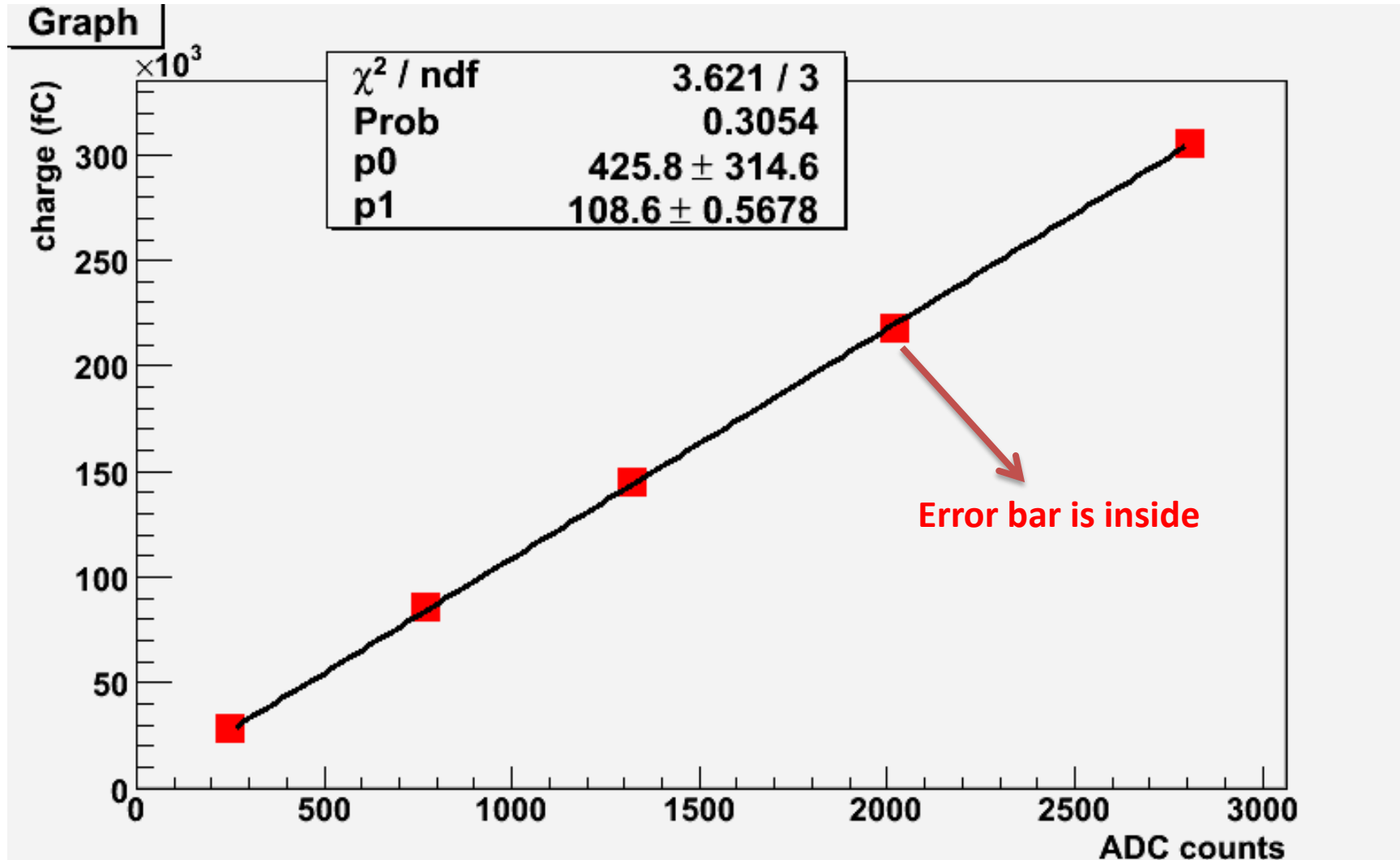
event counts



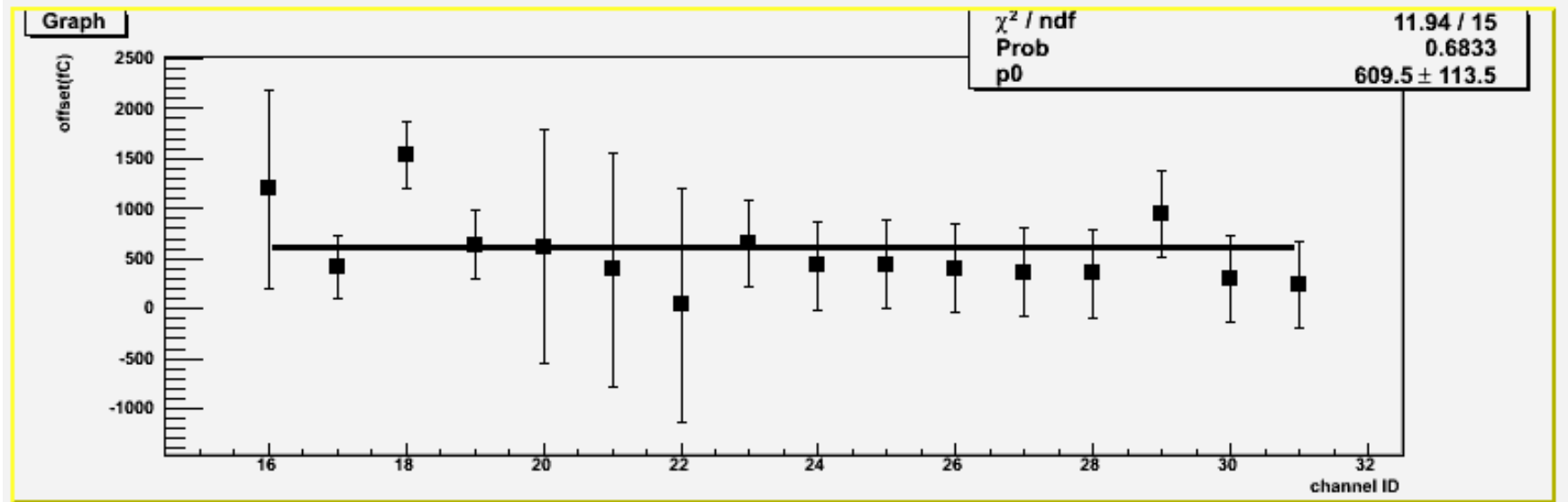
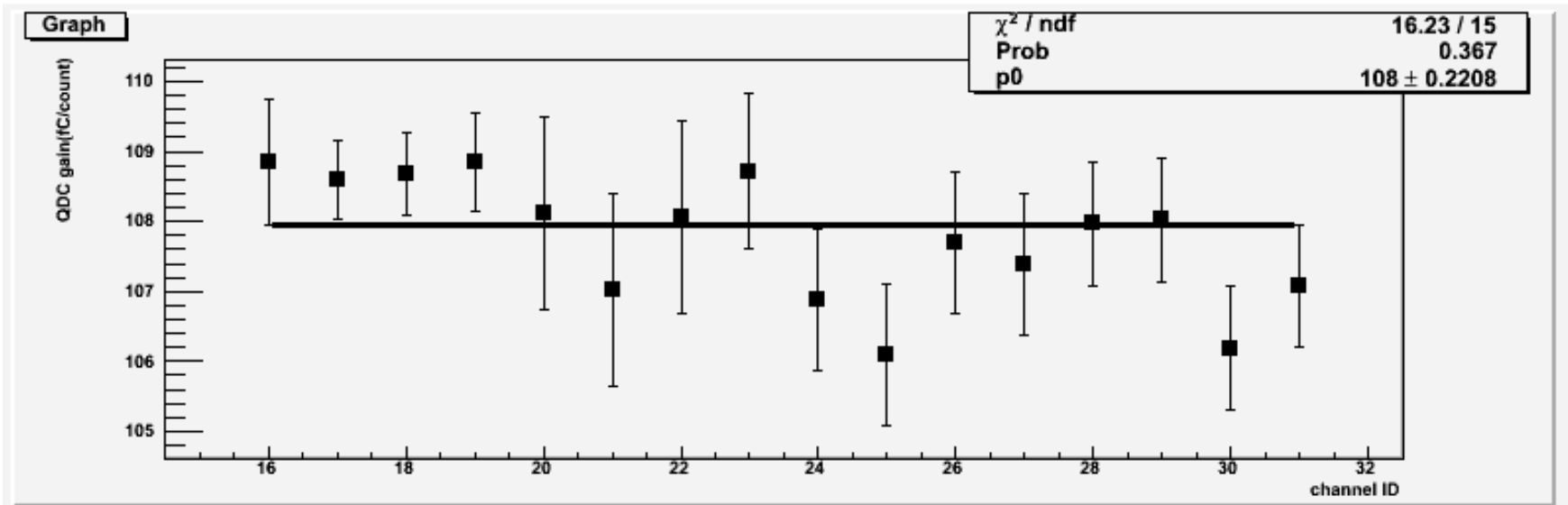
event counts



# A typical fitting plot of Q VS QDC counts



# QDC gain and offset for different channels

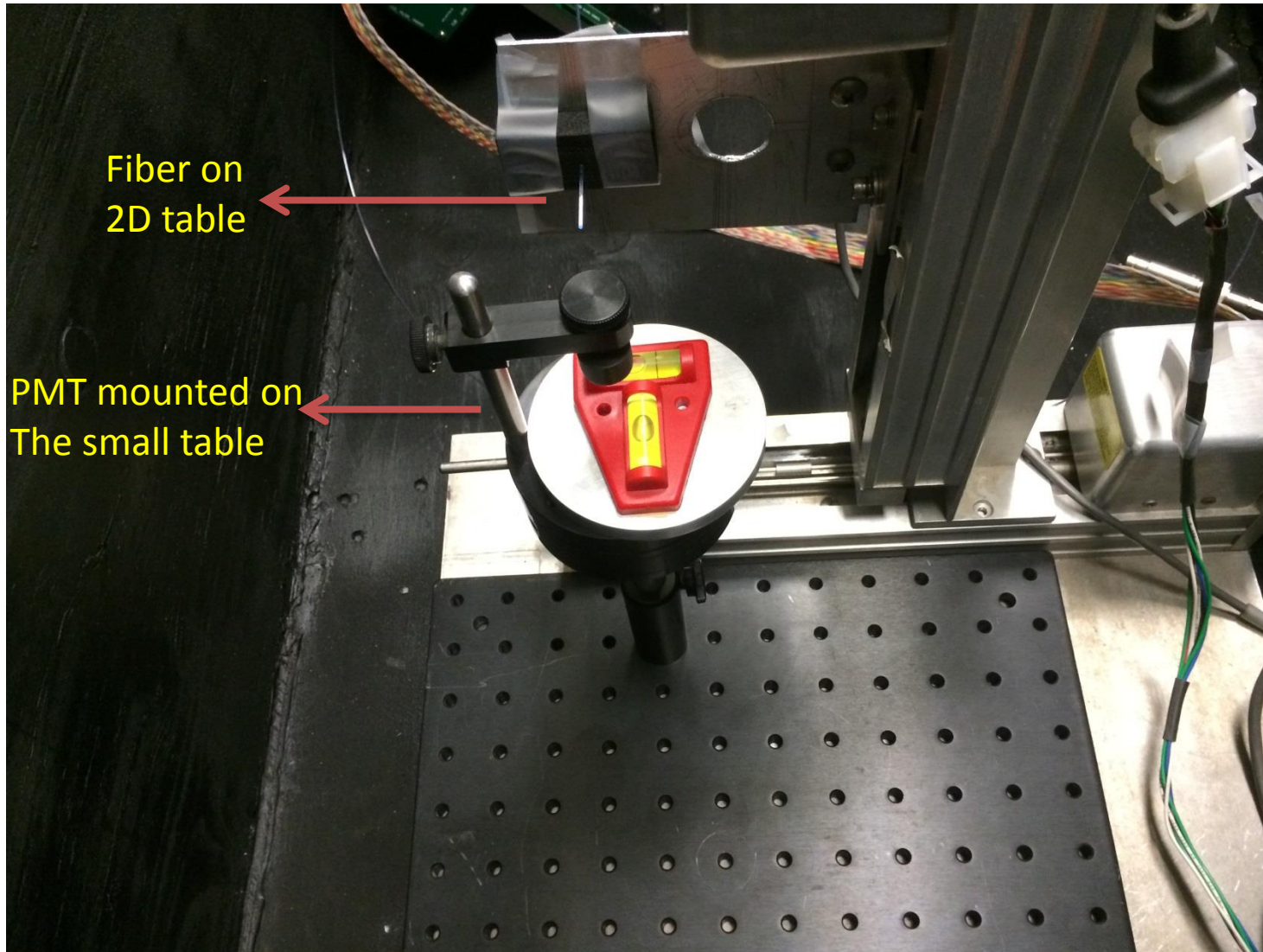


There is +/-2% un-uniformity between different channels

- Uniformity test for MaPMT at 450V (low gain)



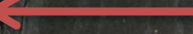
# PMT uniformity test ---test setup



Fiber on  
2D table



PMT mounted on  
The small table

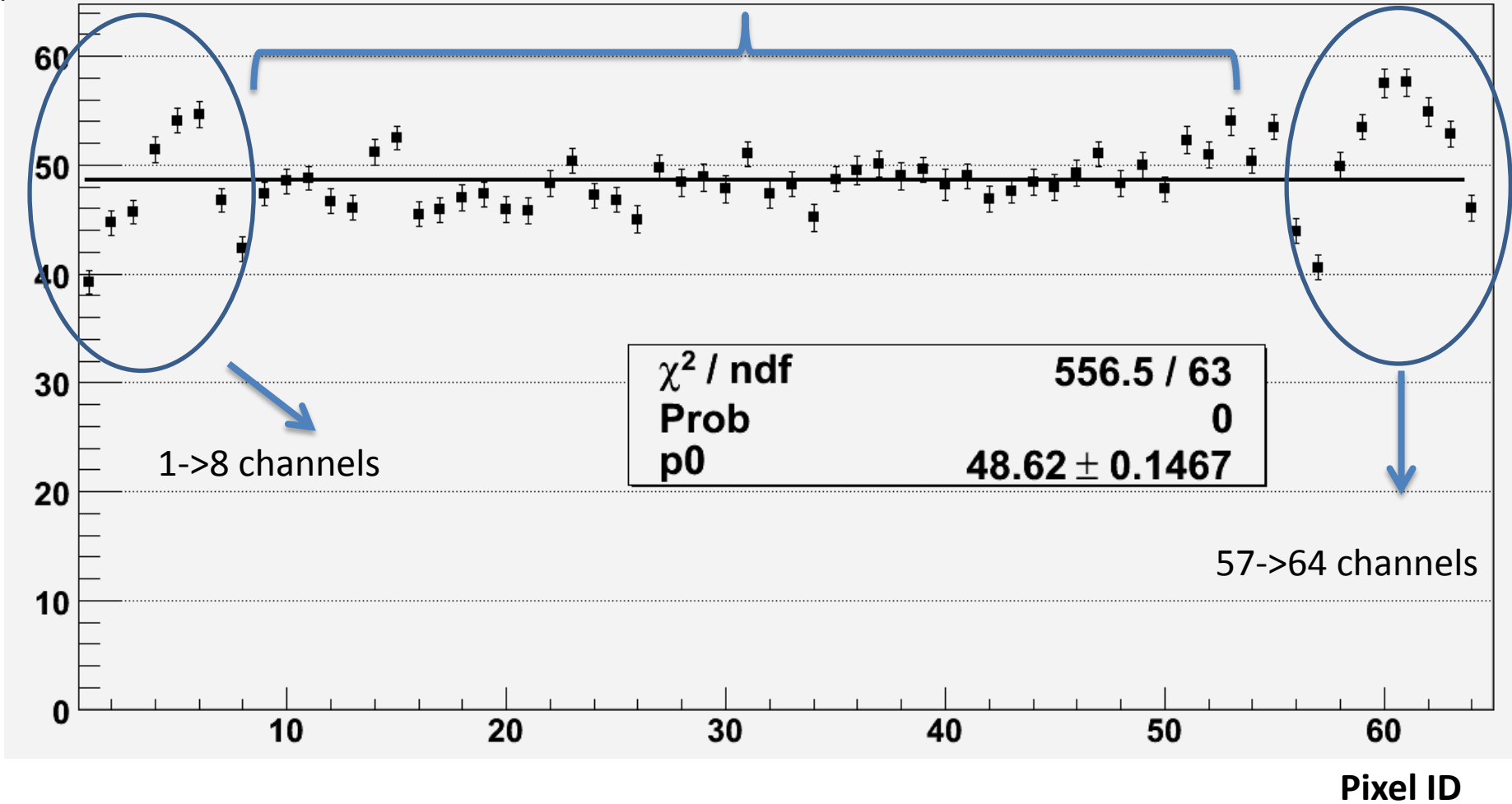


Scan fiber from  
Pixel to pixel

# Uniformity test

QDC counts

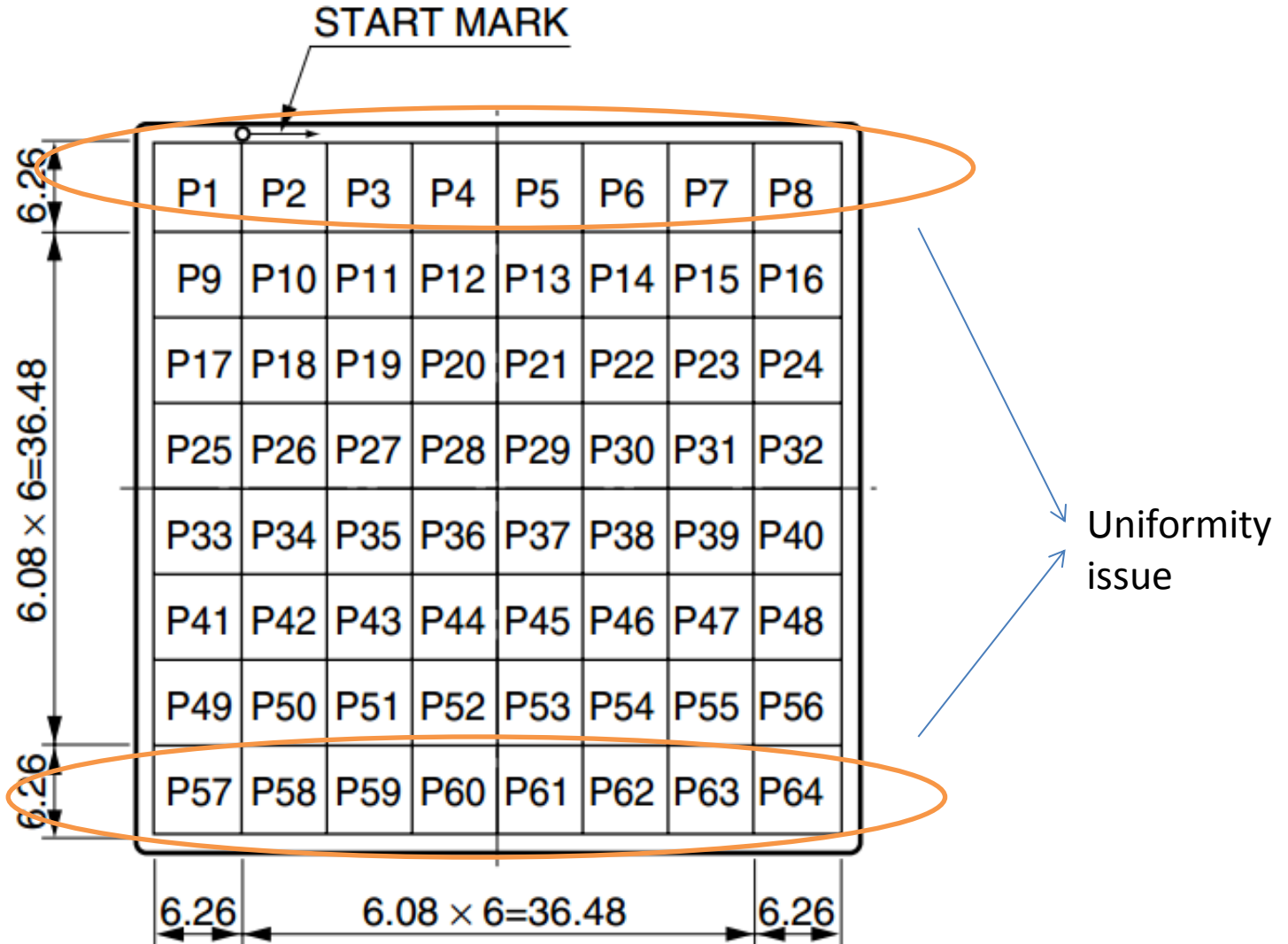
Less than +/-10% fluctuation



Upper limit:  $(58-48)/48= 20\%$

Lower limit:  $(40-48)/48= -16.7\%$

# PMT Pixel map



# Cross-talk at 450V

