Weekly Report

Date: 2025.2.14

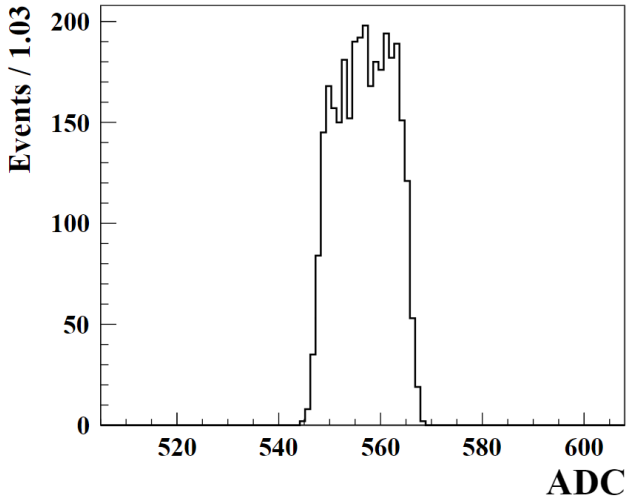
- $\psi(3686) \to e\mu$ (BESIII)
  - ✓ 回复两轮马海龙老师comments
  - ☐ 已进入CWR
- MPT2321 readout system
  - ✓ 电荷线性度测量
  - ☐ 4*8 Sipm test board v2焊接好了，后续计划先直接耦合塑闪探测单光子信号
- $B \to K_S\pi^0$(Belle II)
  - ☐ 正在恢复KEKCC账号
    - ➢ KEKCC账号与KEK账号邮箱不一致，正在修改

MPT2321 readout system

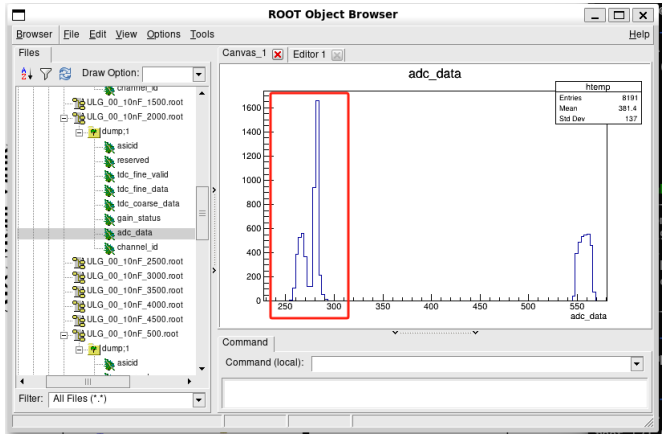
电荷线性度测量

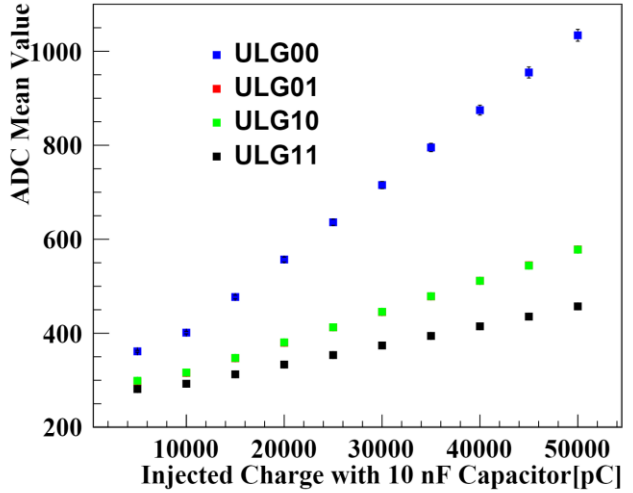
- 低增益模式
- 注入波形
  - 注入方波进行测量时，在方波下降沿会产生触发，影响测量。
  - 可用外部触发信号，尝试后发现单端转差分芯片输出信号有问题。
  - 换成指数下降波形没有额外触发，但不确定其对测量的影响。
- 测量结果
  - Adc在270左右有一个峰，分析中将其去除。(可能和配置文件中开启了反馈使能相关)
  - 注入电荷计算公式:
    - $\Delta Q = \Delta V \times C$

指数下降波形



ULG00 10nF 2000mV
测试条件下ADC分布



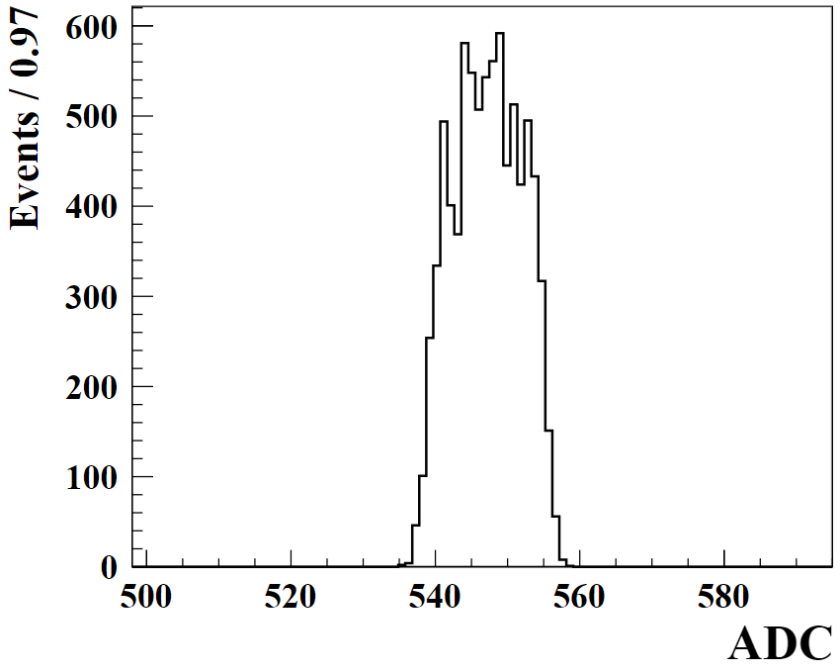


ADC vs Injected Charge

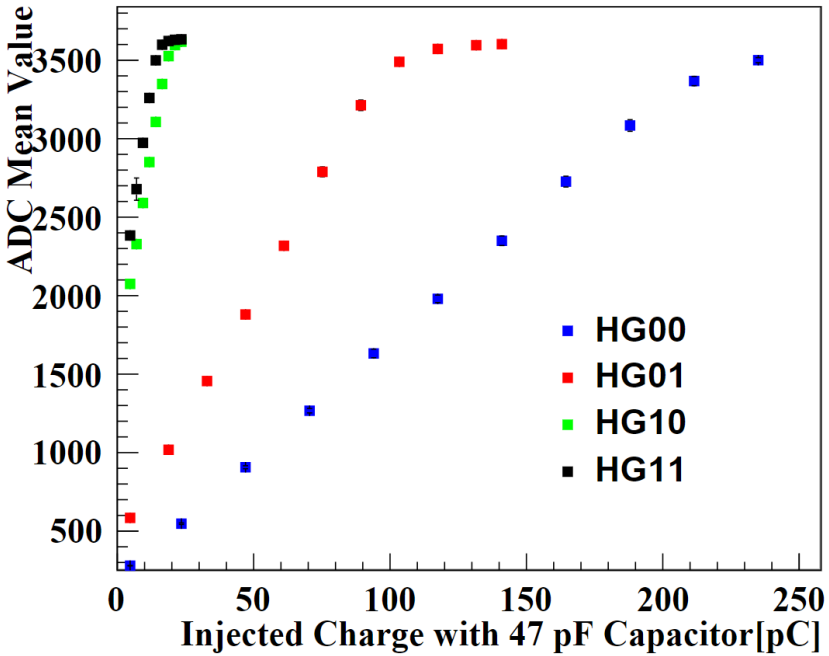
MPT2321 readout system

电荷线性度测量

- 高增益模式
  - 没有发现额外的峰



ULG00 47pF 500mV测试条件下ADC分布

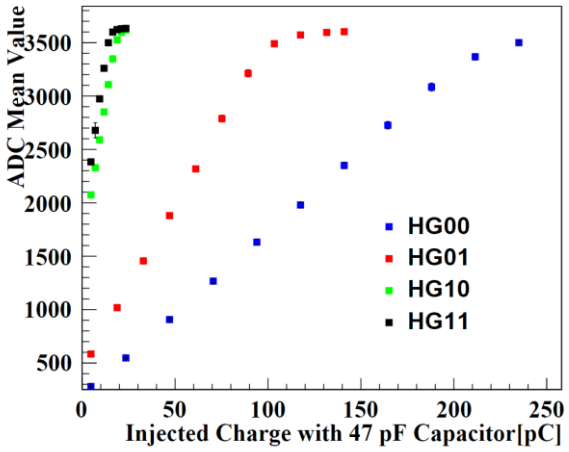


ADC vs Injected Charge

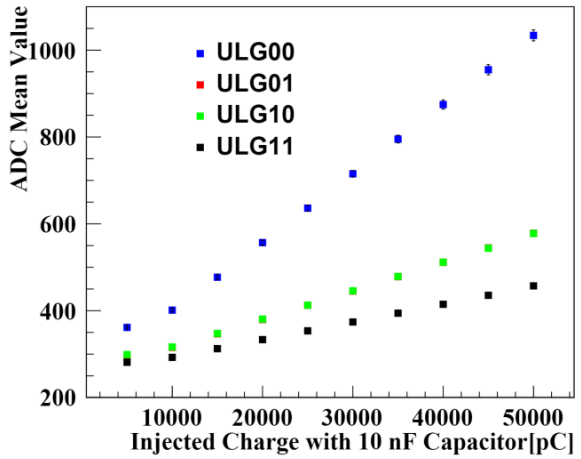
MPT2321 readout system

电荷线性度测量结果

- 与朱老师发表文章对比
- 高增益模式趋势一致，低增益模式有区别



High-gain mode



Low-gain mode

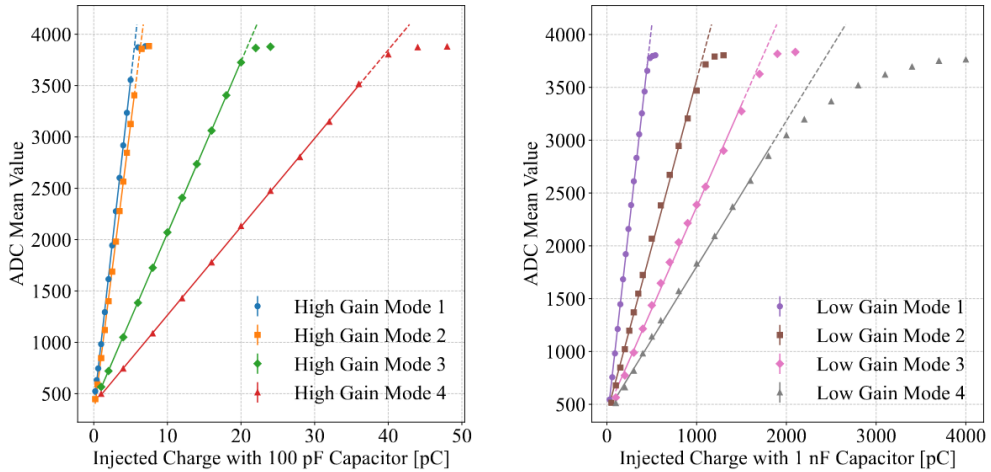


Figure 2. Response linearity under high-gain (left) and low-gain (right) modes. Charges were injected using 100 pF and 1 nF capacitors for high-gain and low-gain modes, respectively.

arXiv:2411.18927