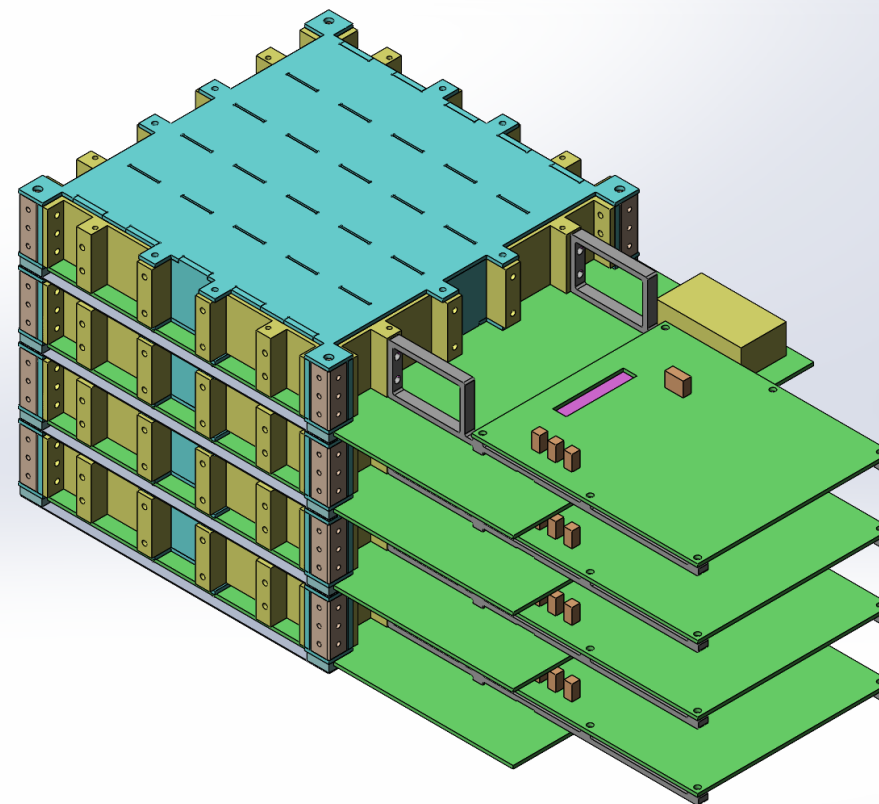
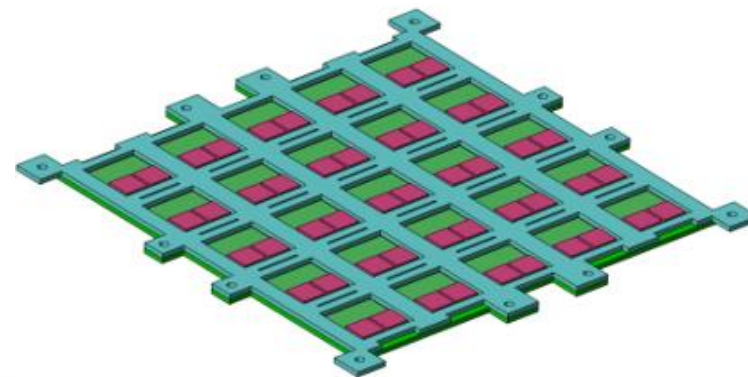
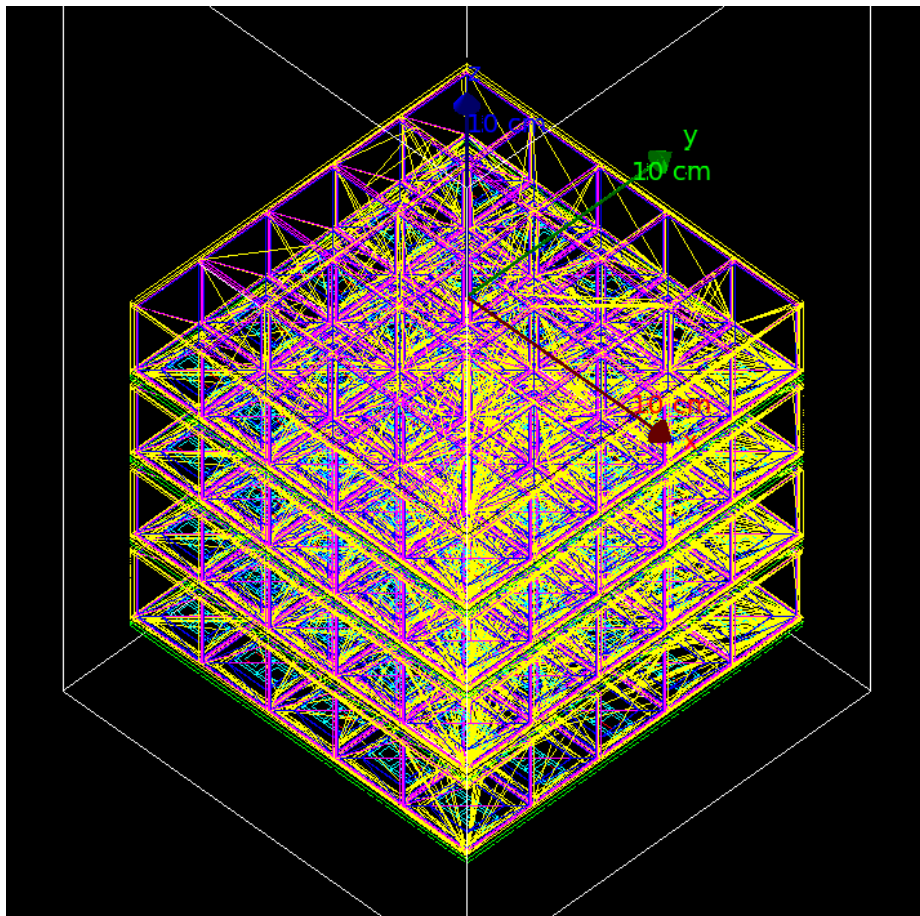


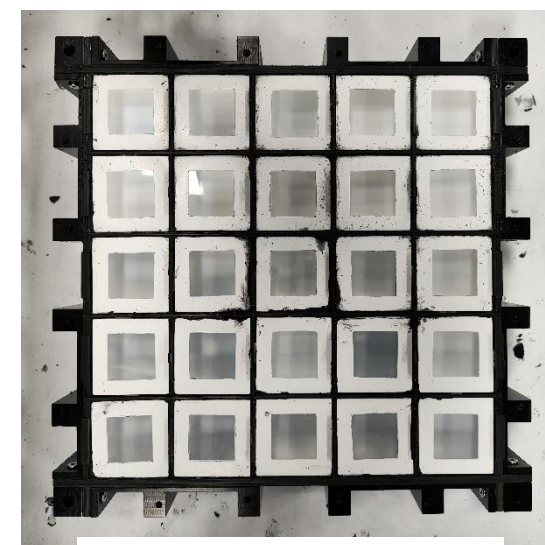
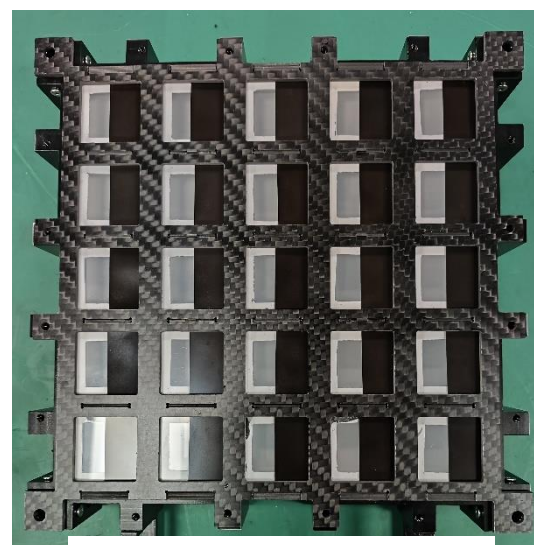
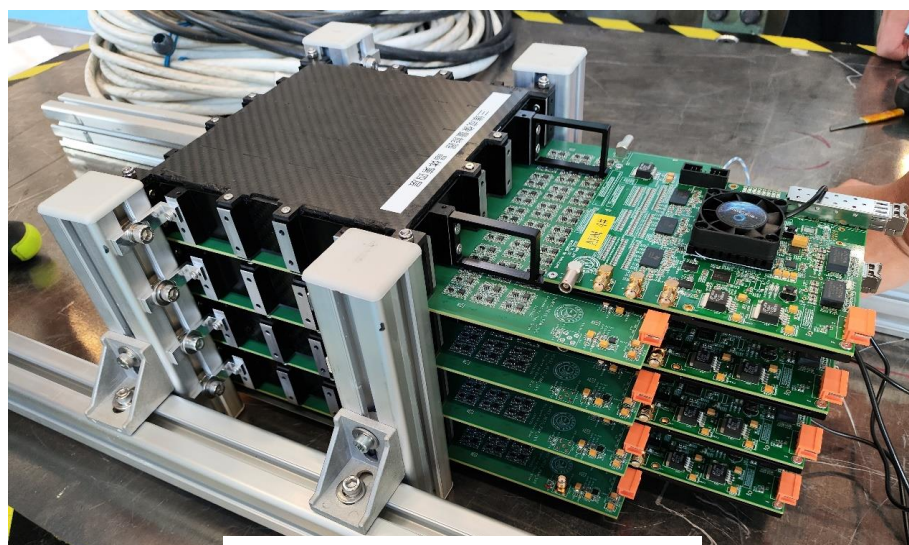
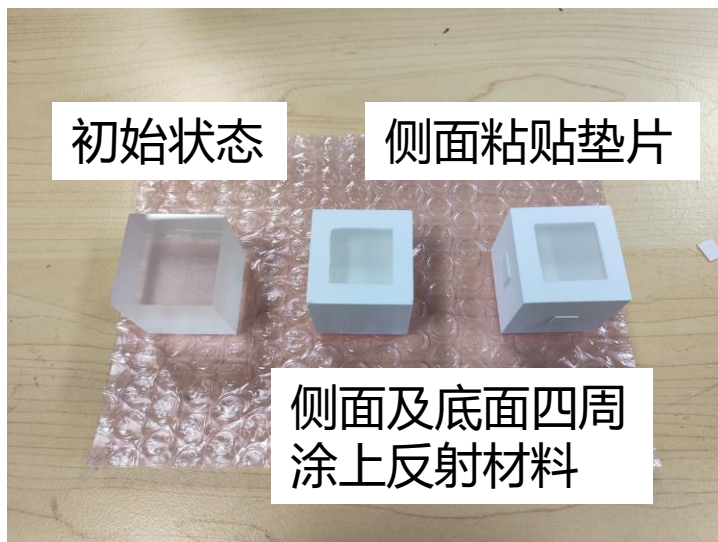
HEIC-Cube Geant4 simulation

张研硕

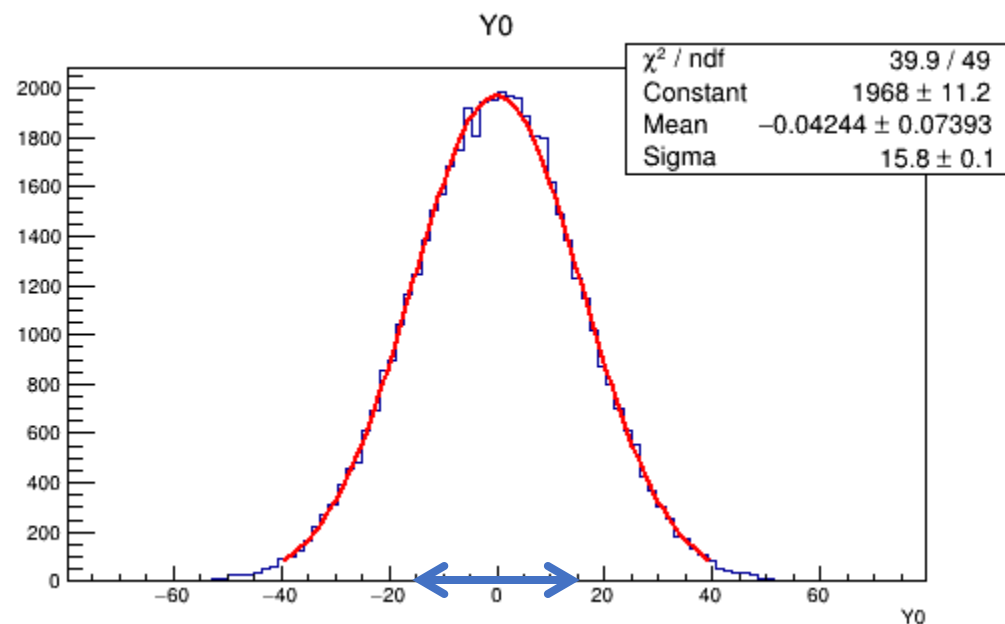
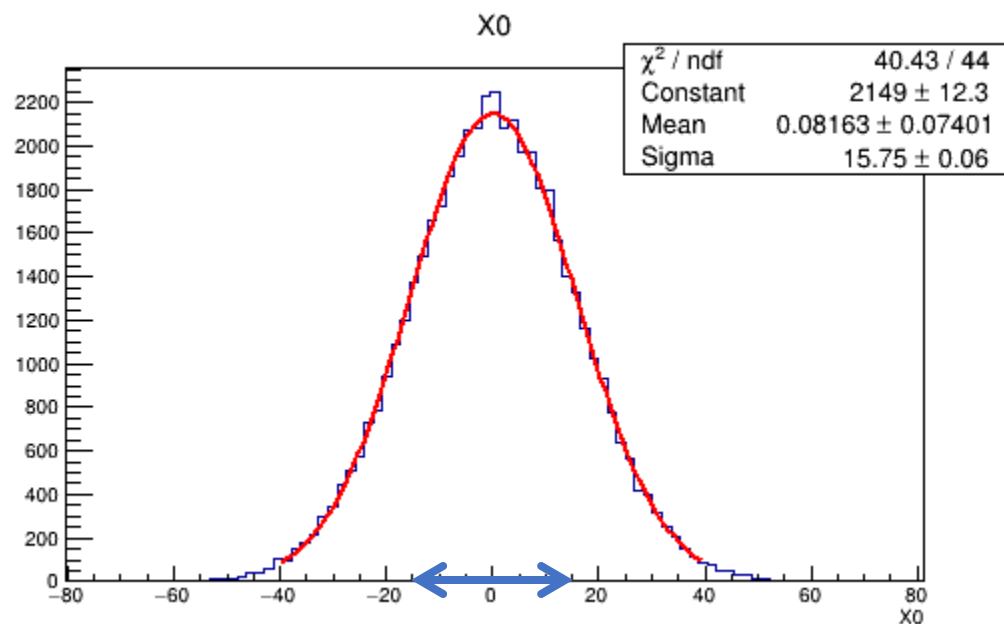
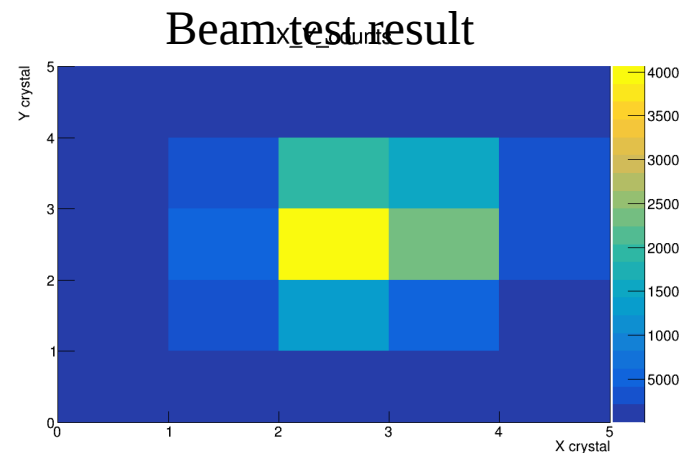
2024.01.18

Detector structure



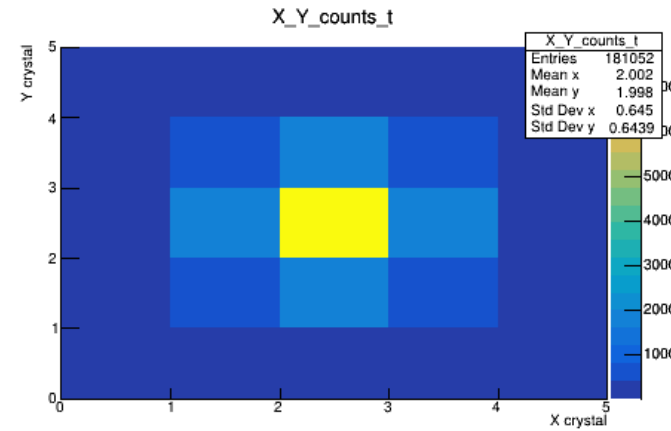
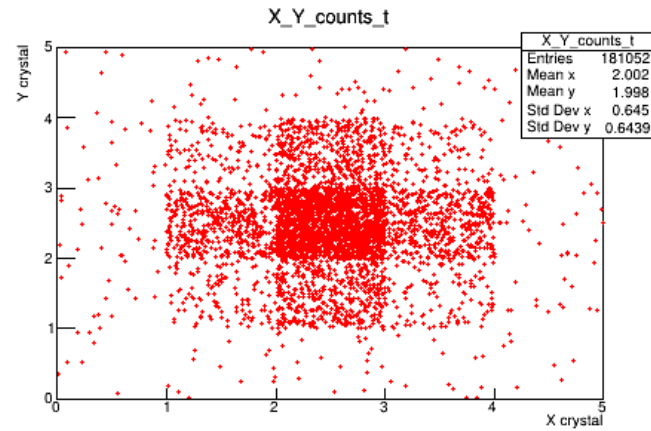
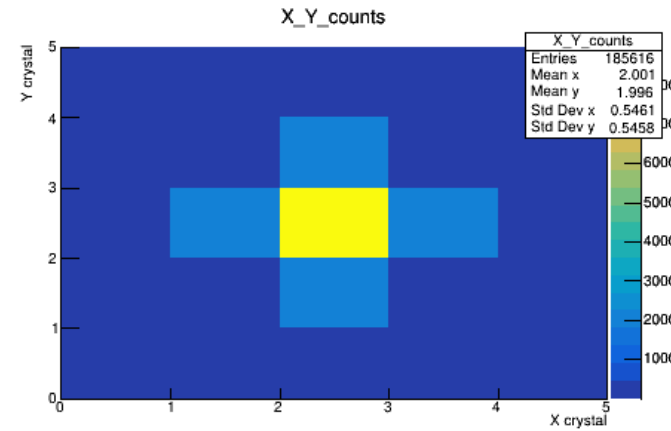
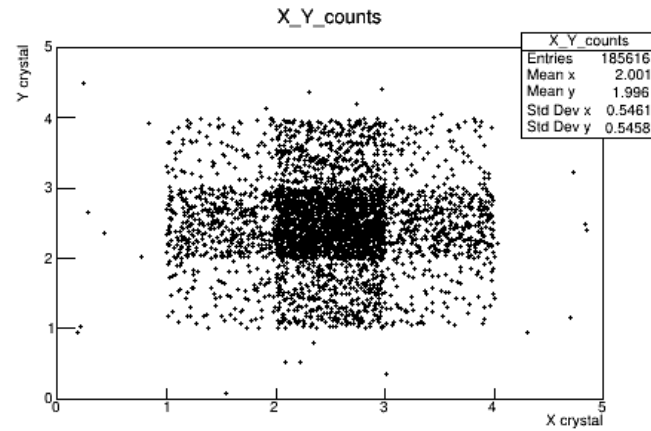
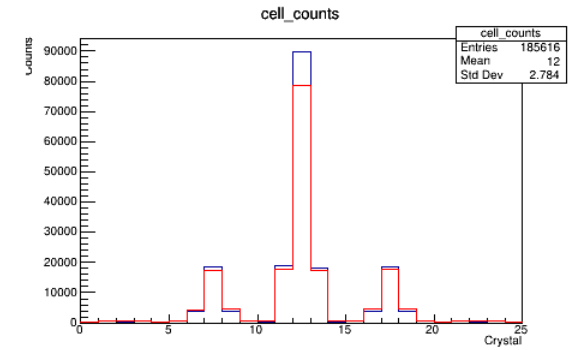


Particle source

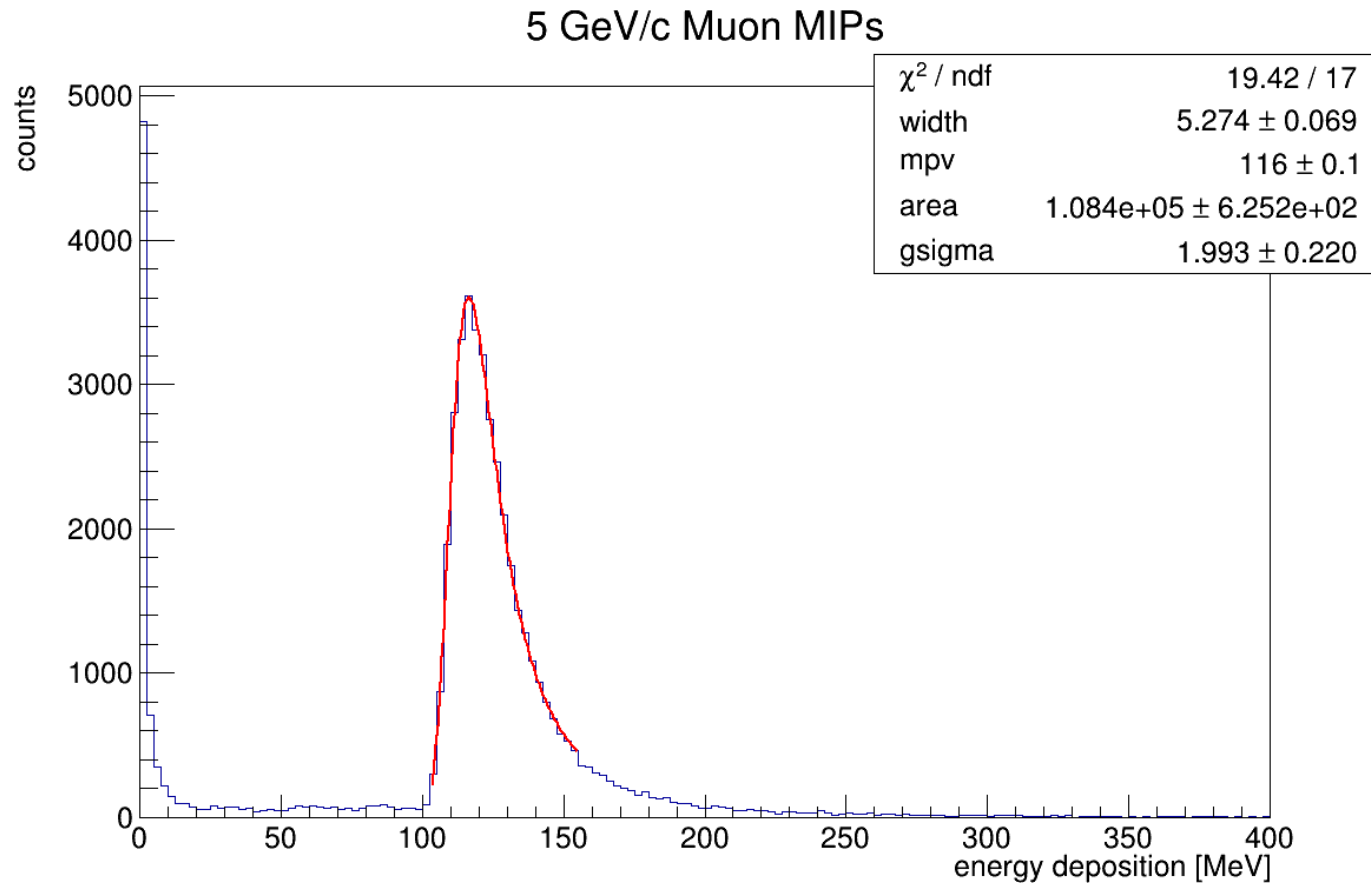


xOy 平面源，在 x 和 y 方向上都符合高斯分布

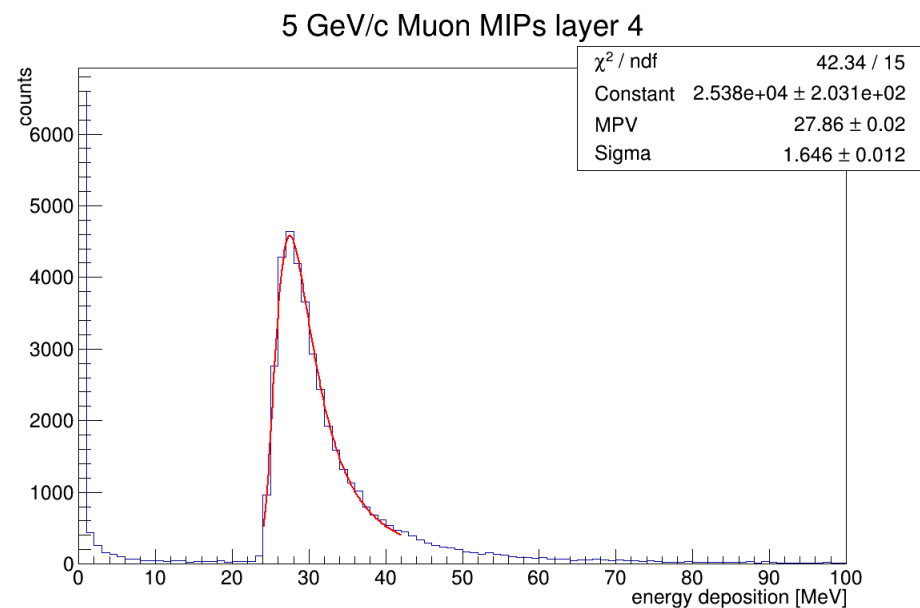
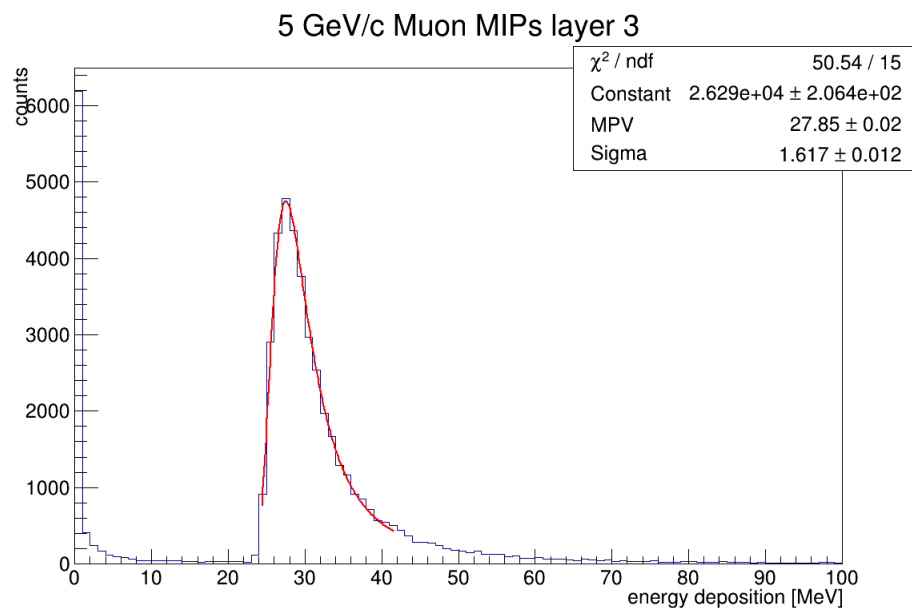
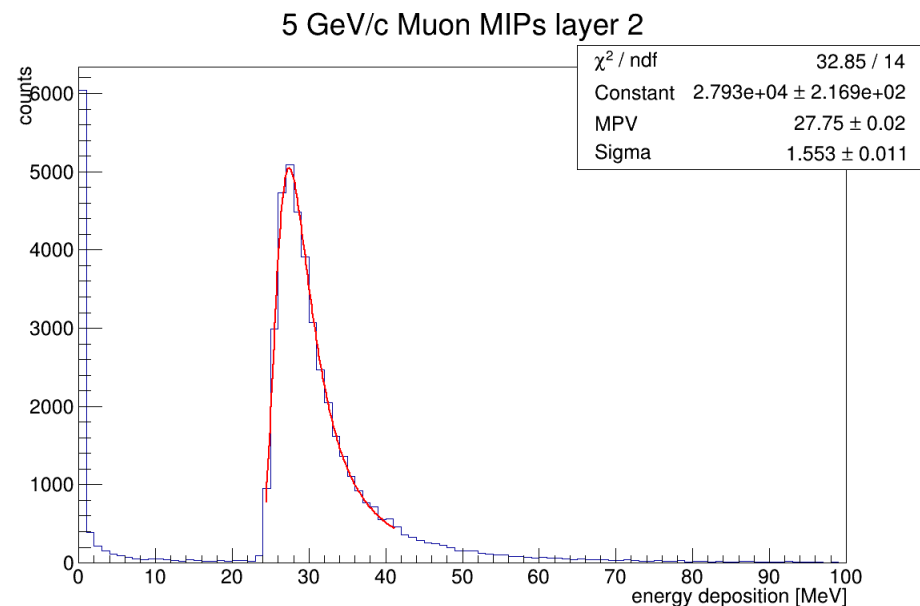
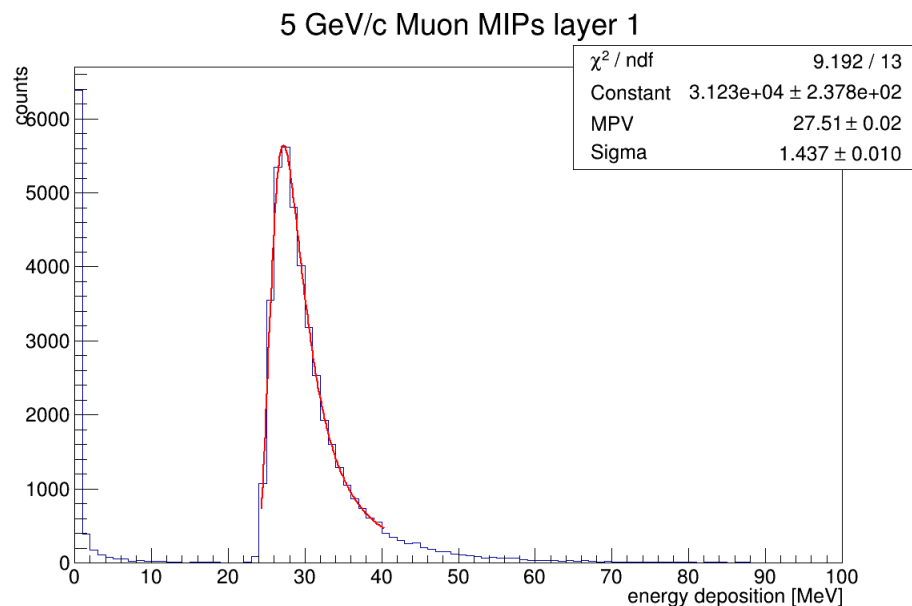
Black: electron; Red: pion;



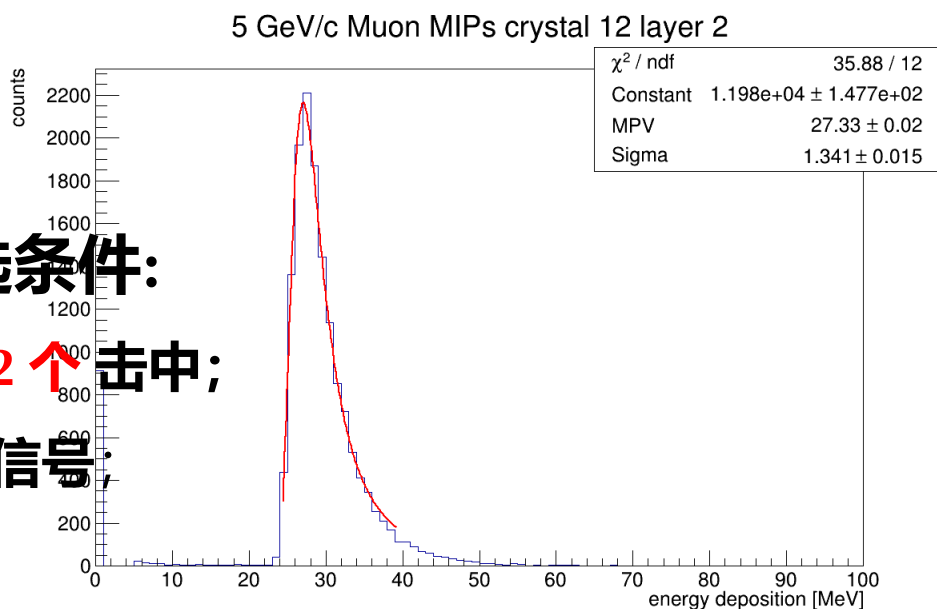
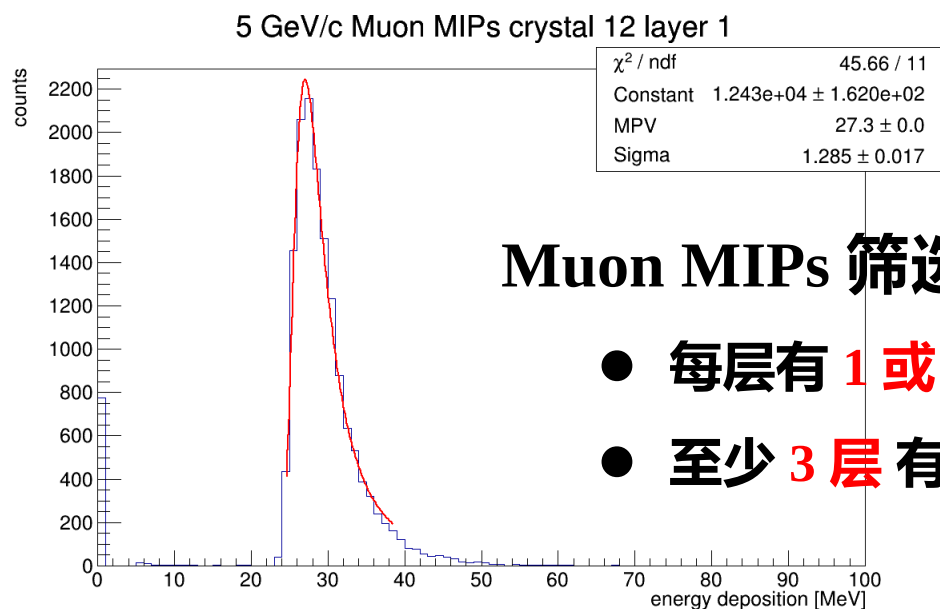
5 GeV/c Muon $\times$ 50000 events



平均每层晶体内的能量沉积为 **29 MeV**

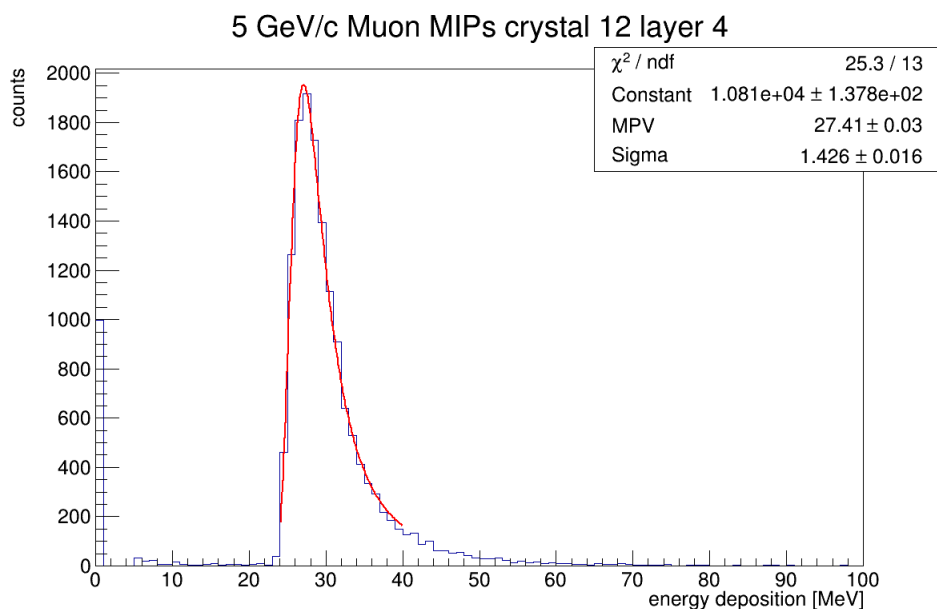
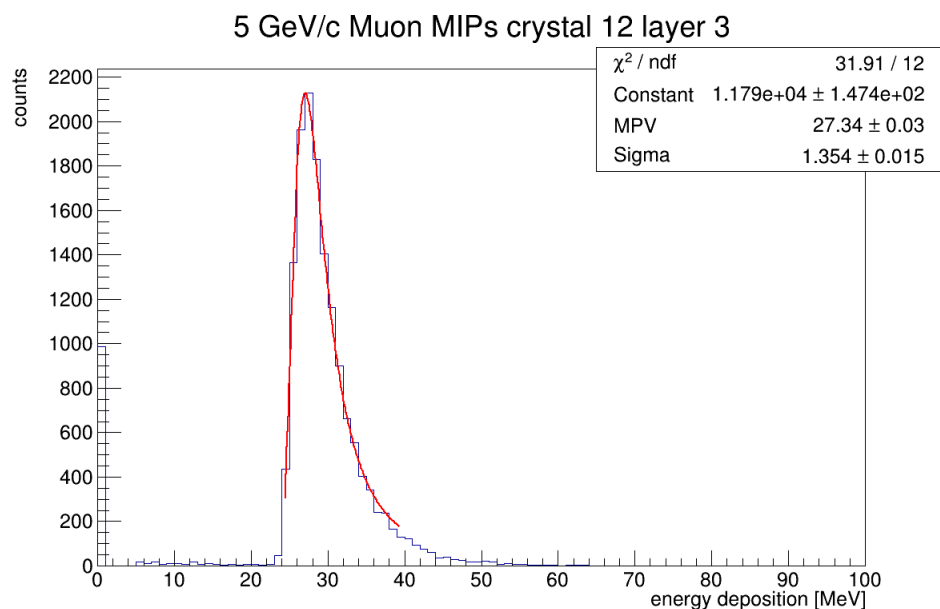


每层晶体的能量沉积为 **27.8 MeV**，与 DAMPE 的结果 $23/25 \times 30 = 27.6$ MeV 保持一致



Muon MIPs 筛选条件:

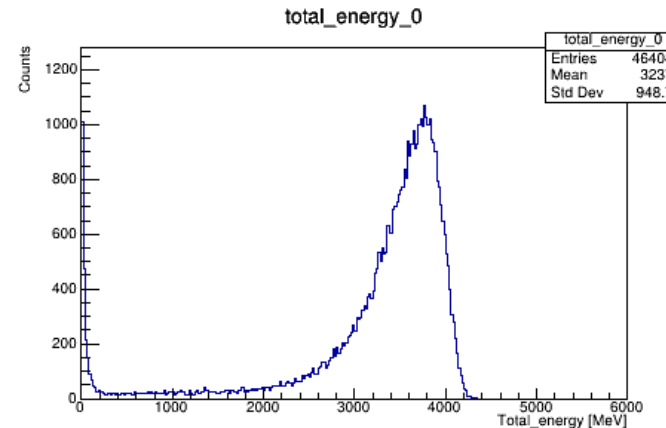
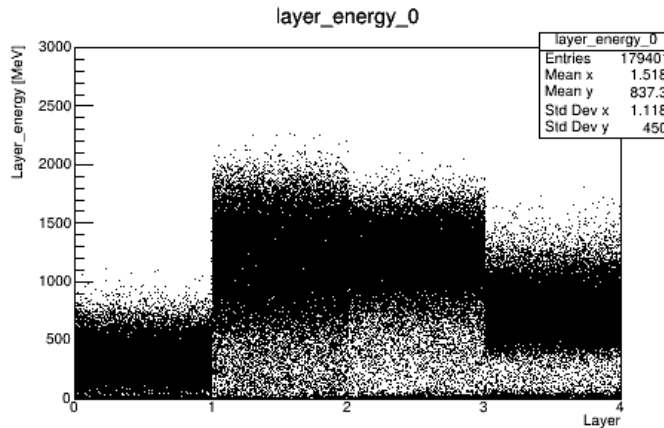
- 每层有 1 或 2 个击中;
- 至少 3 层有信号;



每块晶体的能量沉积为 **27.4 MeV**, 与 DAMPE 的结果 $23/25 \times 30 = 27.6$ MeV 保持一致

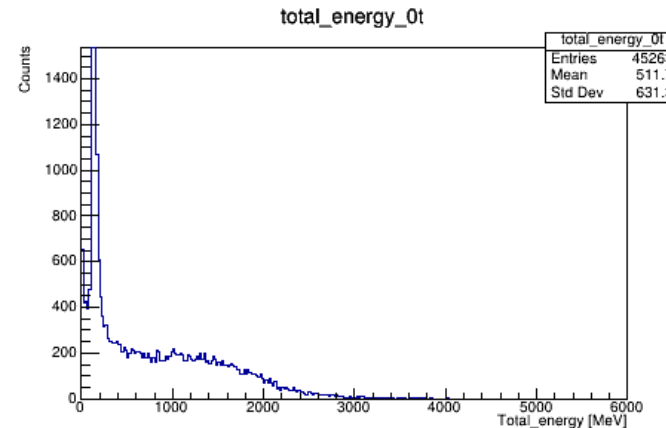
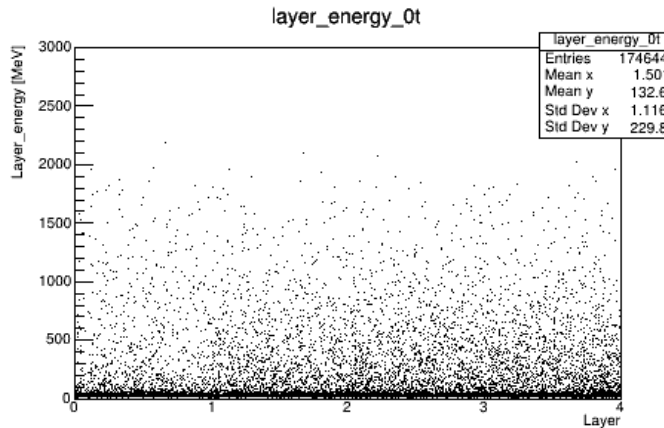
5 GeV/c Pion, Electron $\times$ 50000 events

Electron;

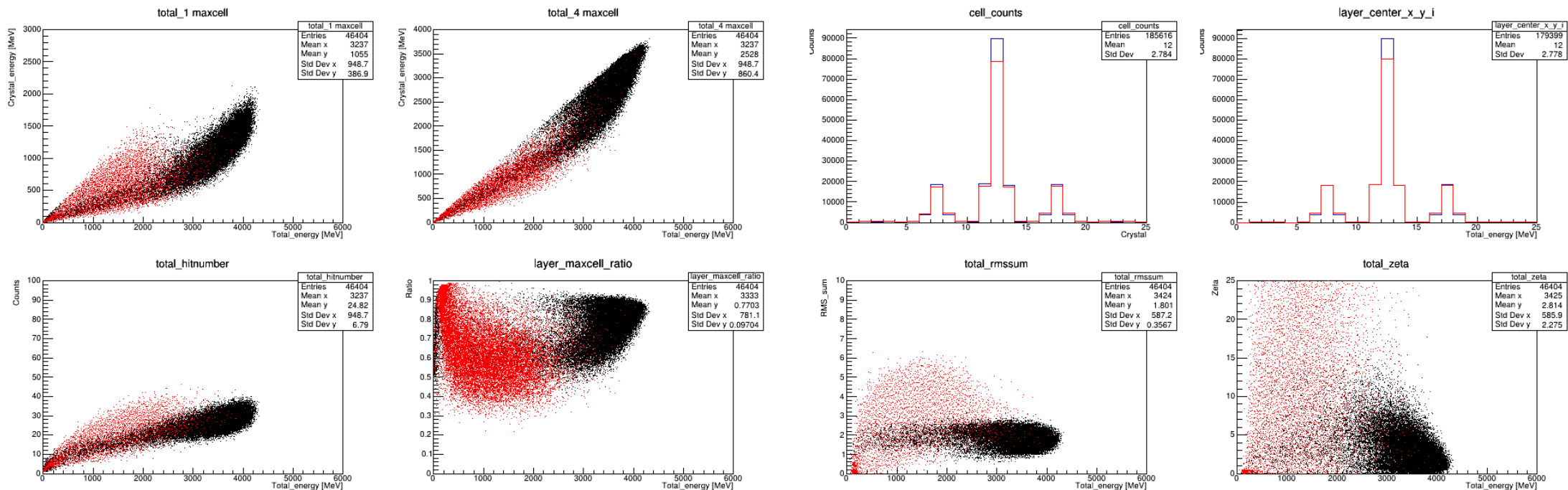


Energy
resolution:
 $291.2/3702 =$
7.87%

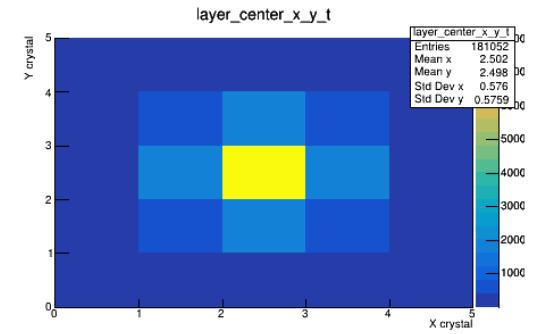
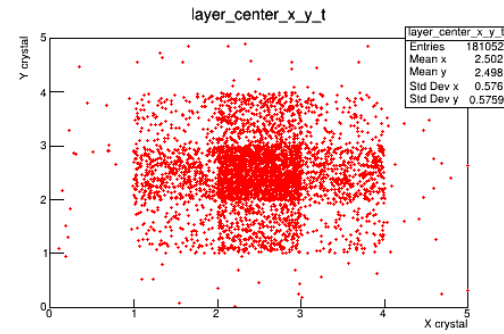
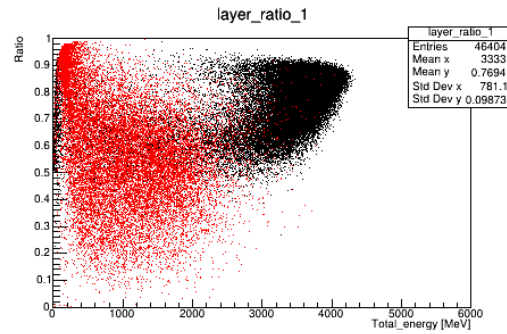
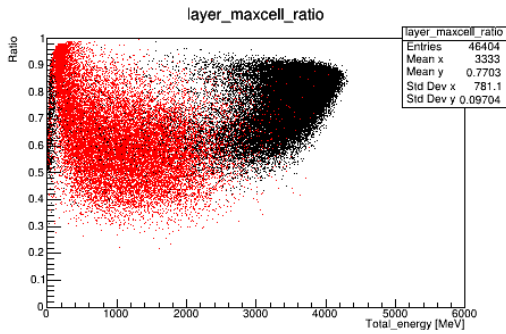
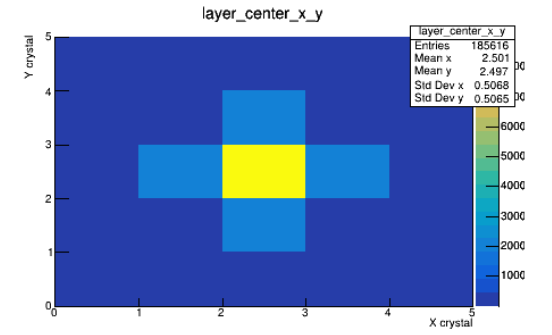
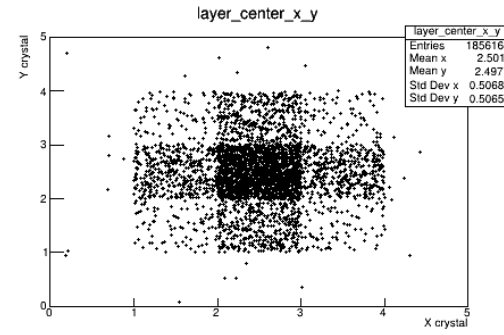
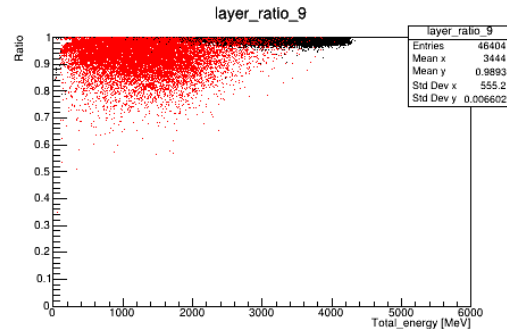
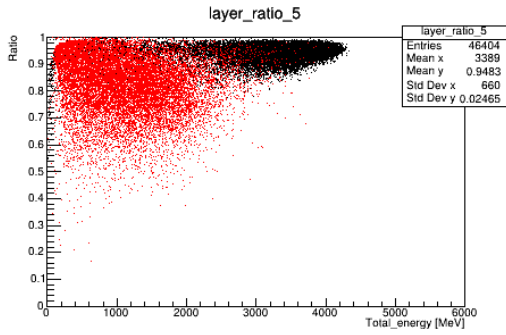
Pion;



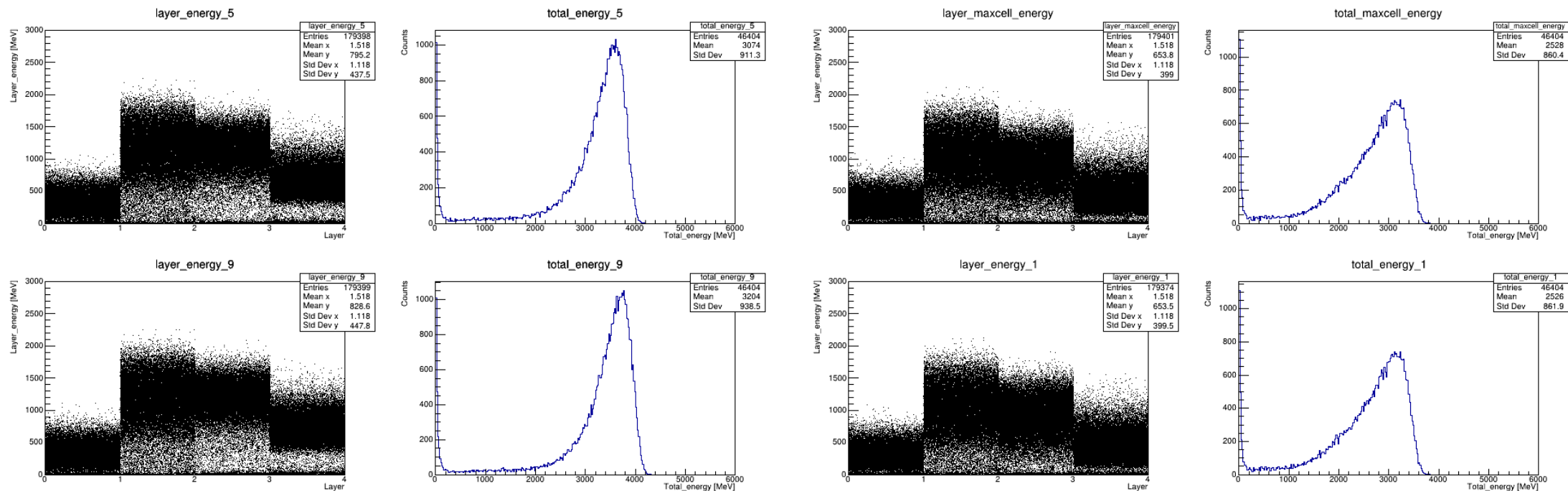
Black: electron; Red: pion;



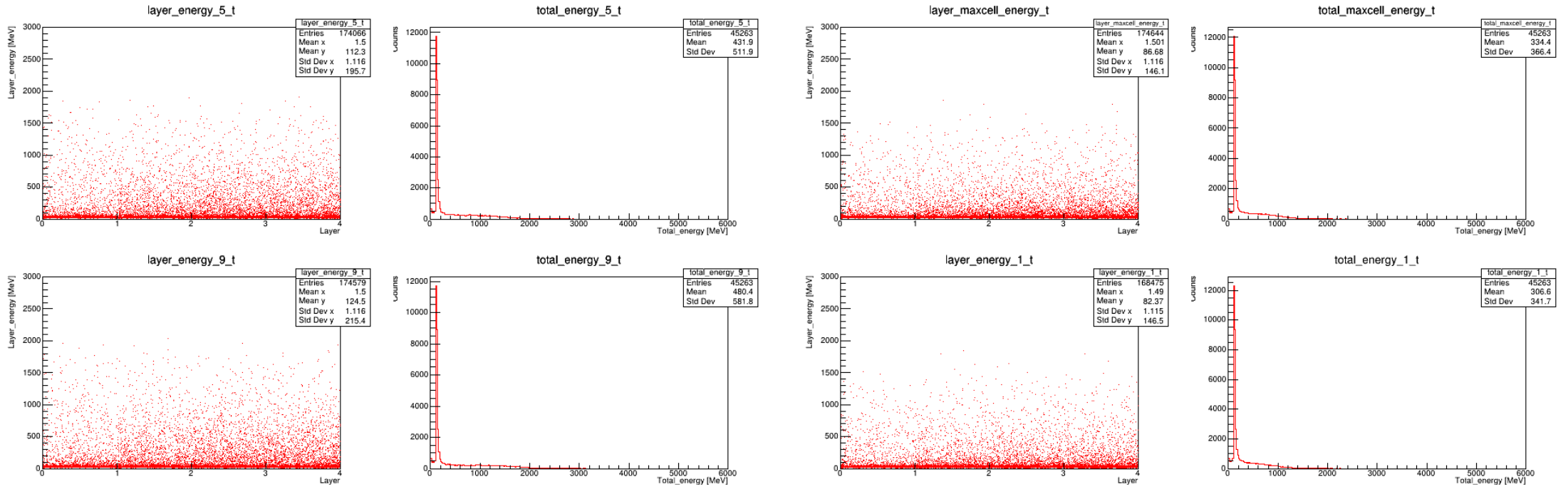
Black: electron; Red: pion;



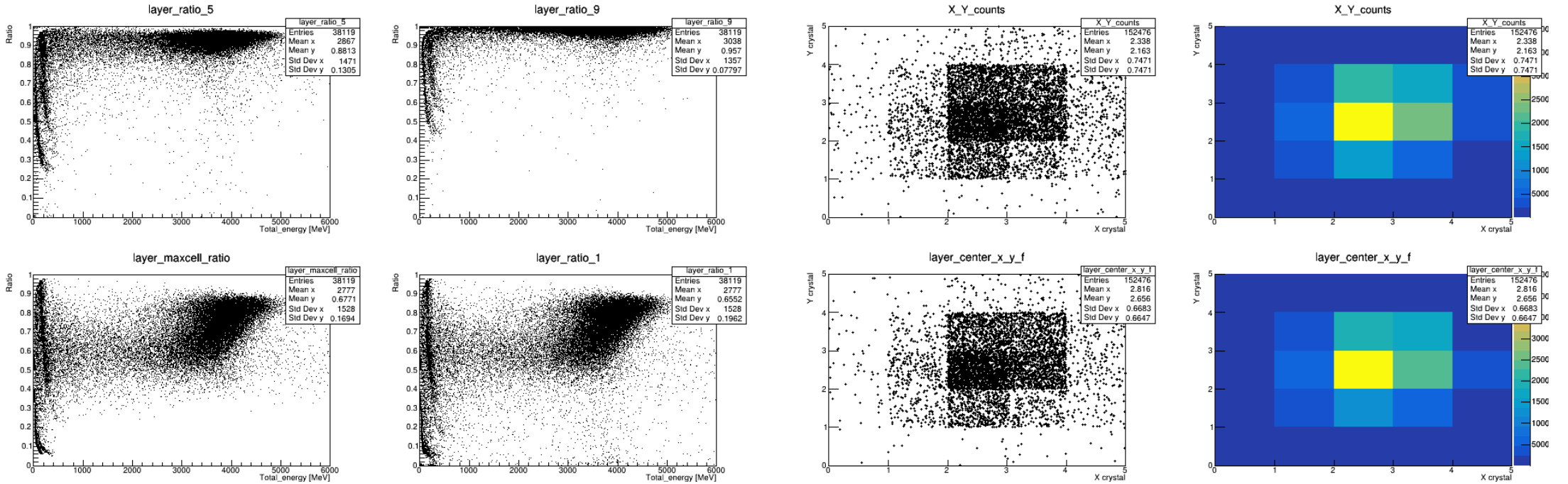
Black: electron; Red: pion;



Black: electron; Red: pion;



Beam test data: 5 GeV/c electron



Beam test data: 5 GeV/c electron

