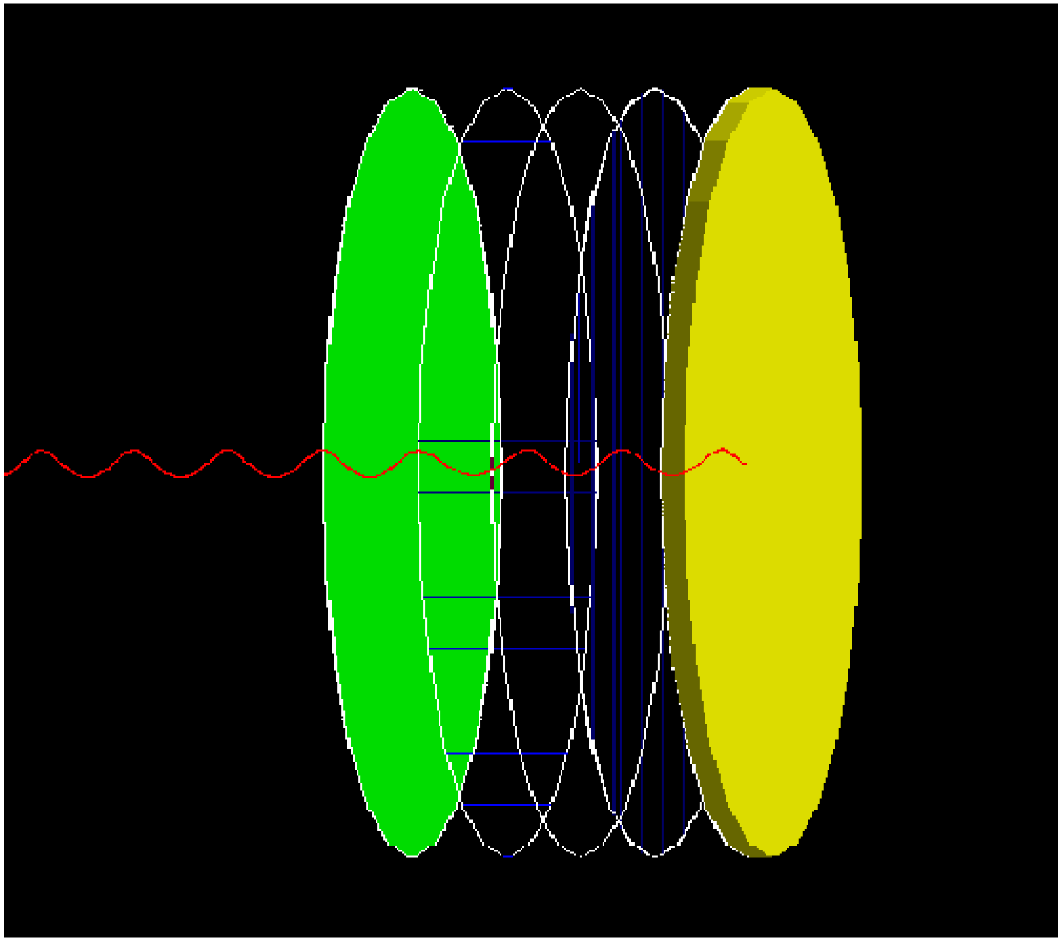
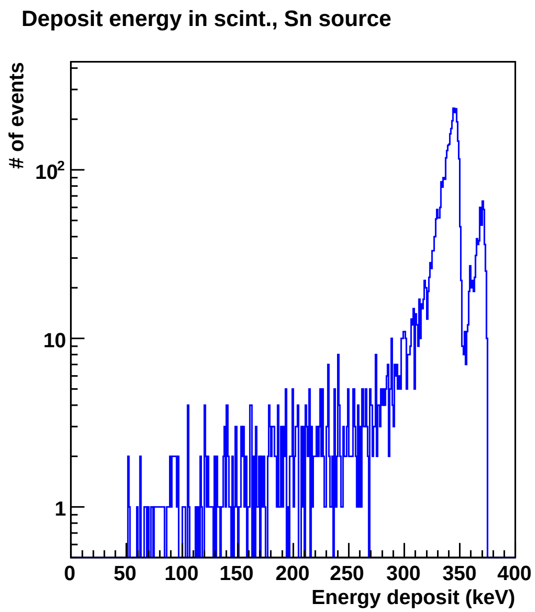


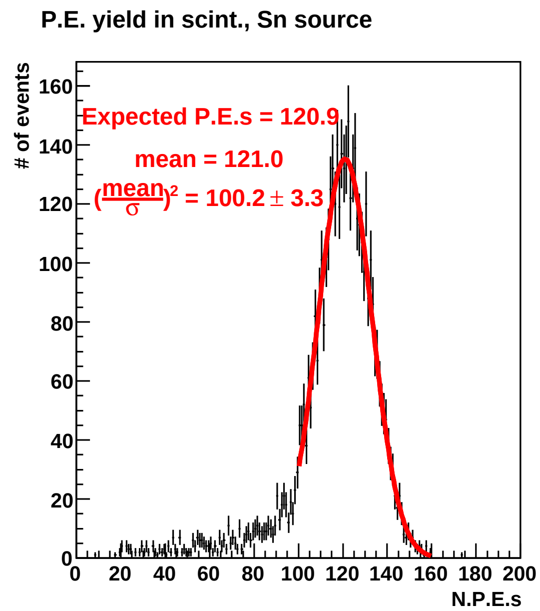
Improvement of MC:
Limited step size in windows and wires in order to evaluate the e-loss more accurately.

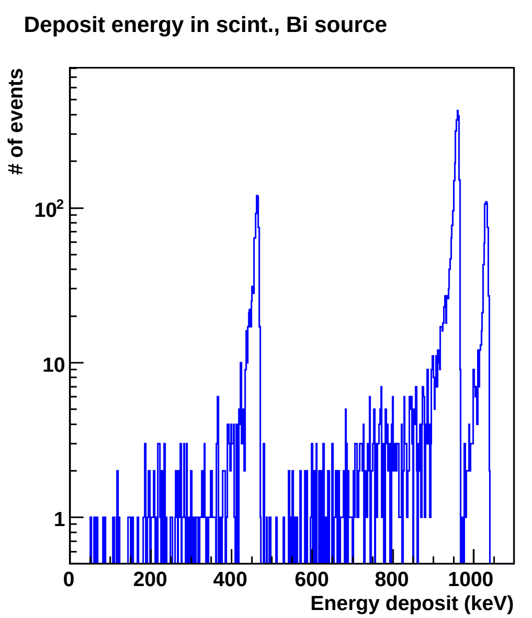
E loss budge in keV. 25 μm front and back mylar windows

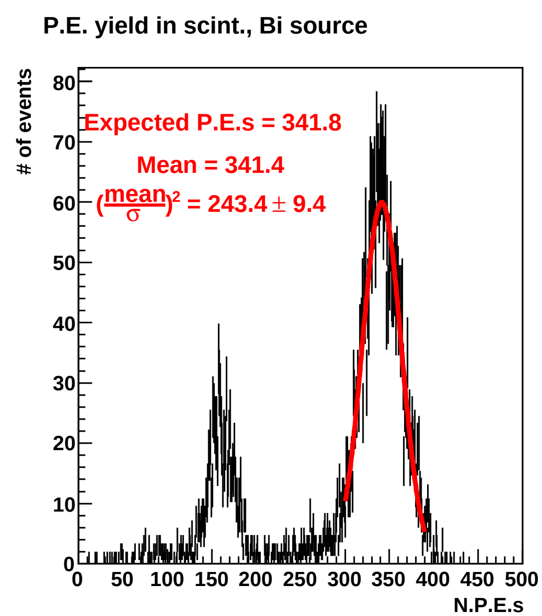
Source	windows	MWPC & wires	scintillator dead layer	total
e gun	31.6	9.5	6.5	47.6
Sn	24.0	8.4	3.1	35.5
Bi	18.7	6.2	2.3	27.2

Scintillator energy resolution with Sn and Bi sources (thicker windows)









MWPC position resolution

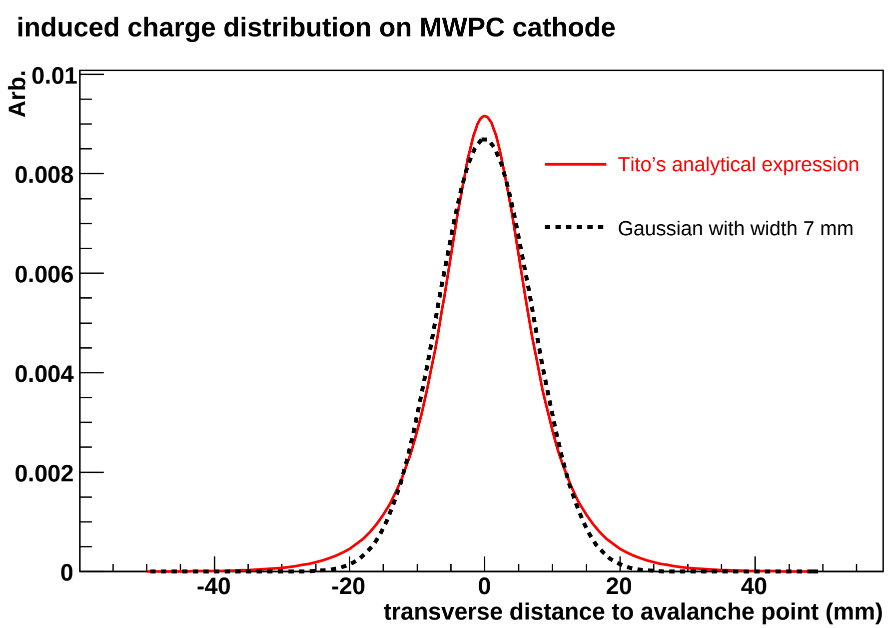
More realistic induced charge distribution on the cathode using Tito's analytical expression using image charges:

$$\sigma(r) \propto \sum (-1)^i \frac{(2i+1)d}{[((2i+1)d)^2 + r^2]^{1.5}}$$

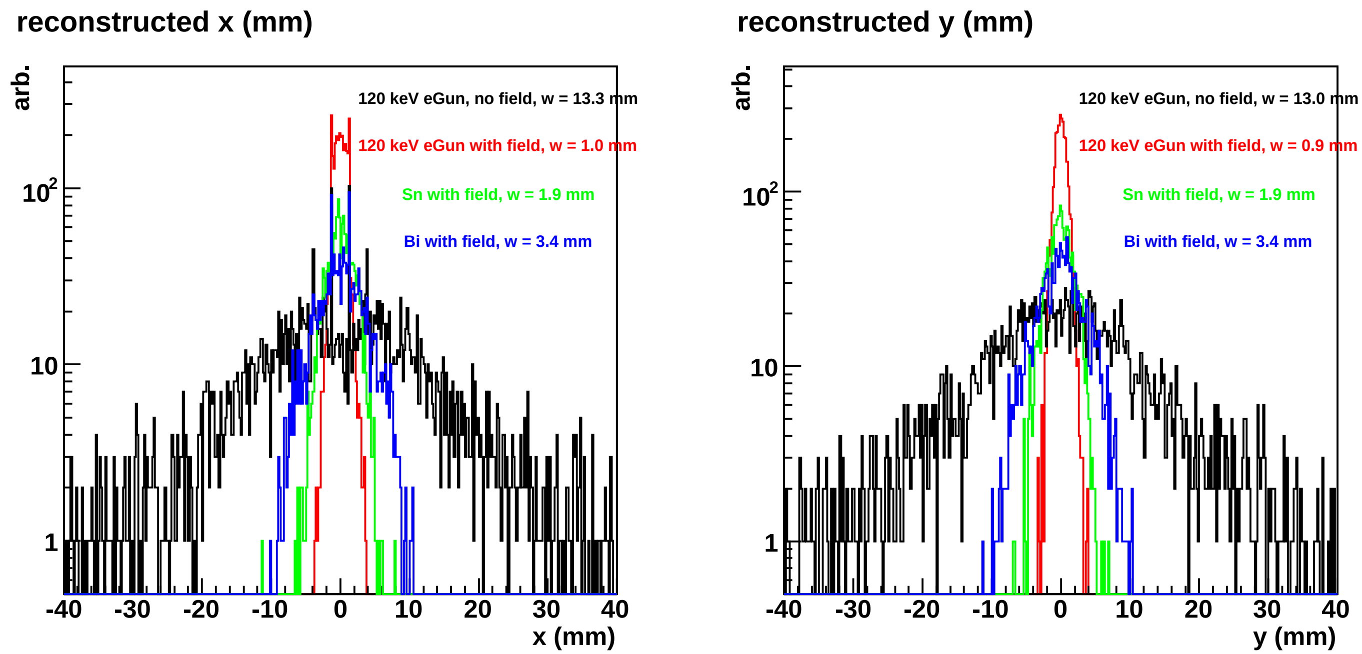
assuming cathodes are infinite grounded conductor plates

r is the transverse distance to the avalanche point

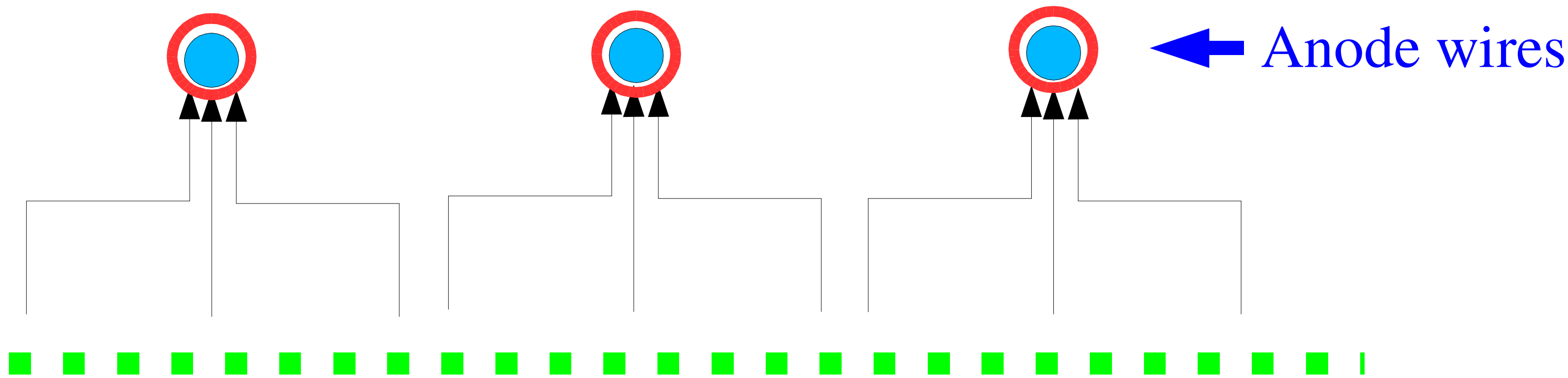
d is the distance from anode to cathode



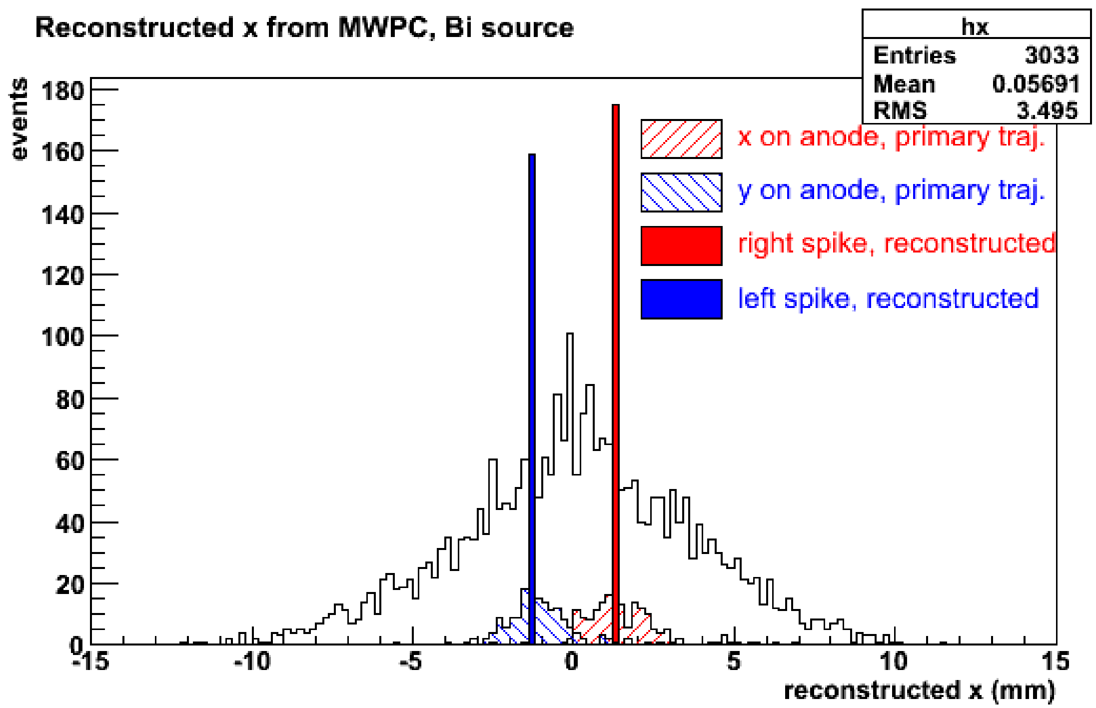
So Gaussian with 7 mm width is a good approximation



- Effect of B field is apparent. e gun results agree with Junhua's thesis
- Same results as last time holds. Got ~2mm position resolution in x and y with Sn source.
- With B field, Lamor radius of electron limits the ultimate position resolution



- **Blue** circles are anode wires
- **Black** arrows are cartoons of drift direction
- **Red** circles represents avalanche: very close to the anode wires
- **Green** "plane": one cathode



Origin of the spikes: locations of avalanche are "quantized" by the anode wires.