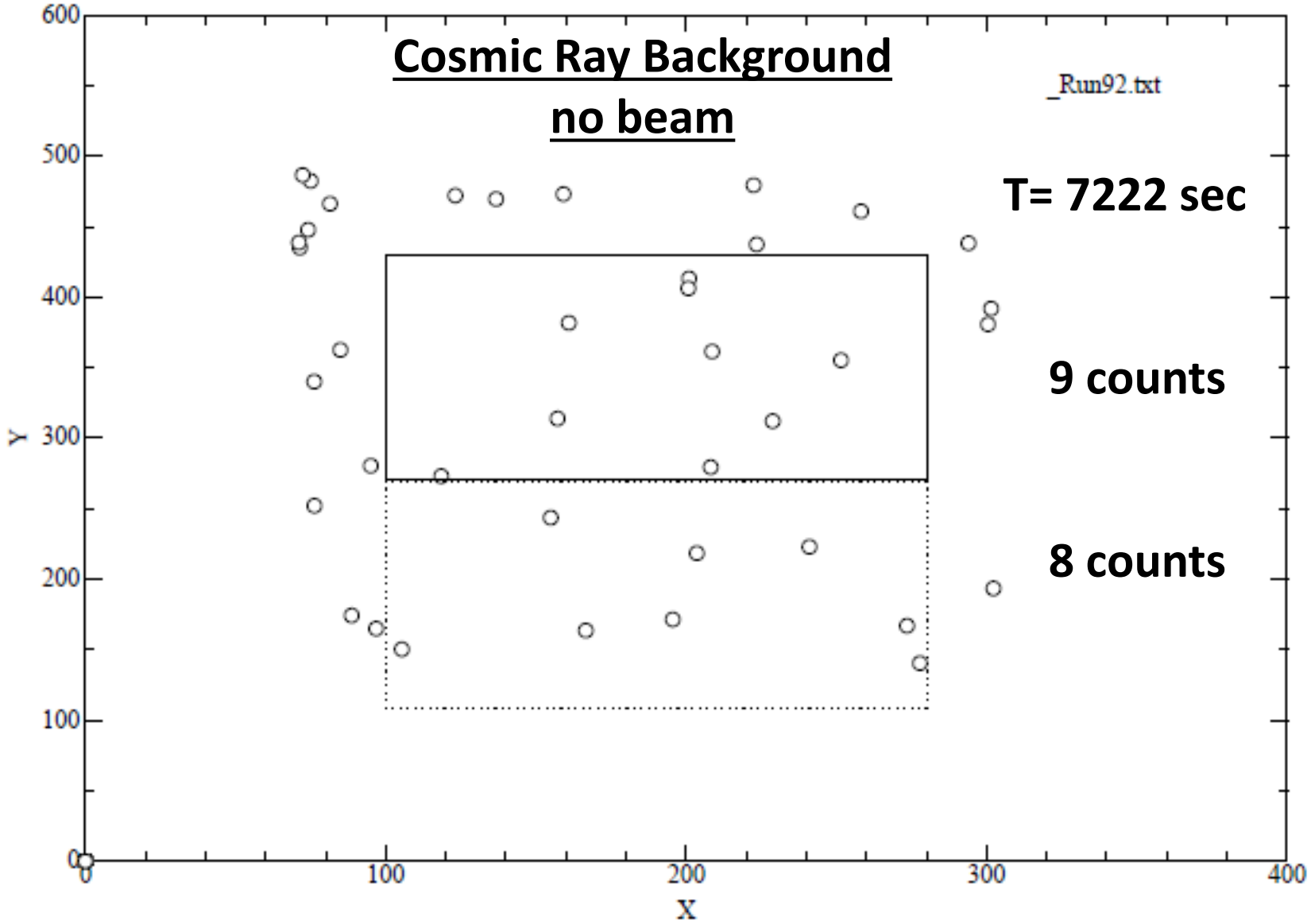
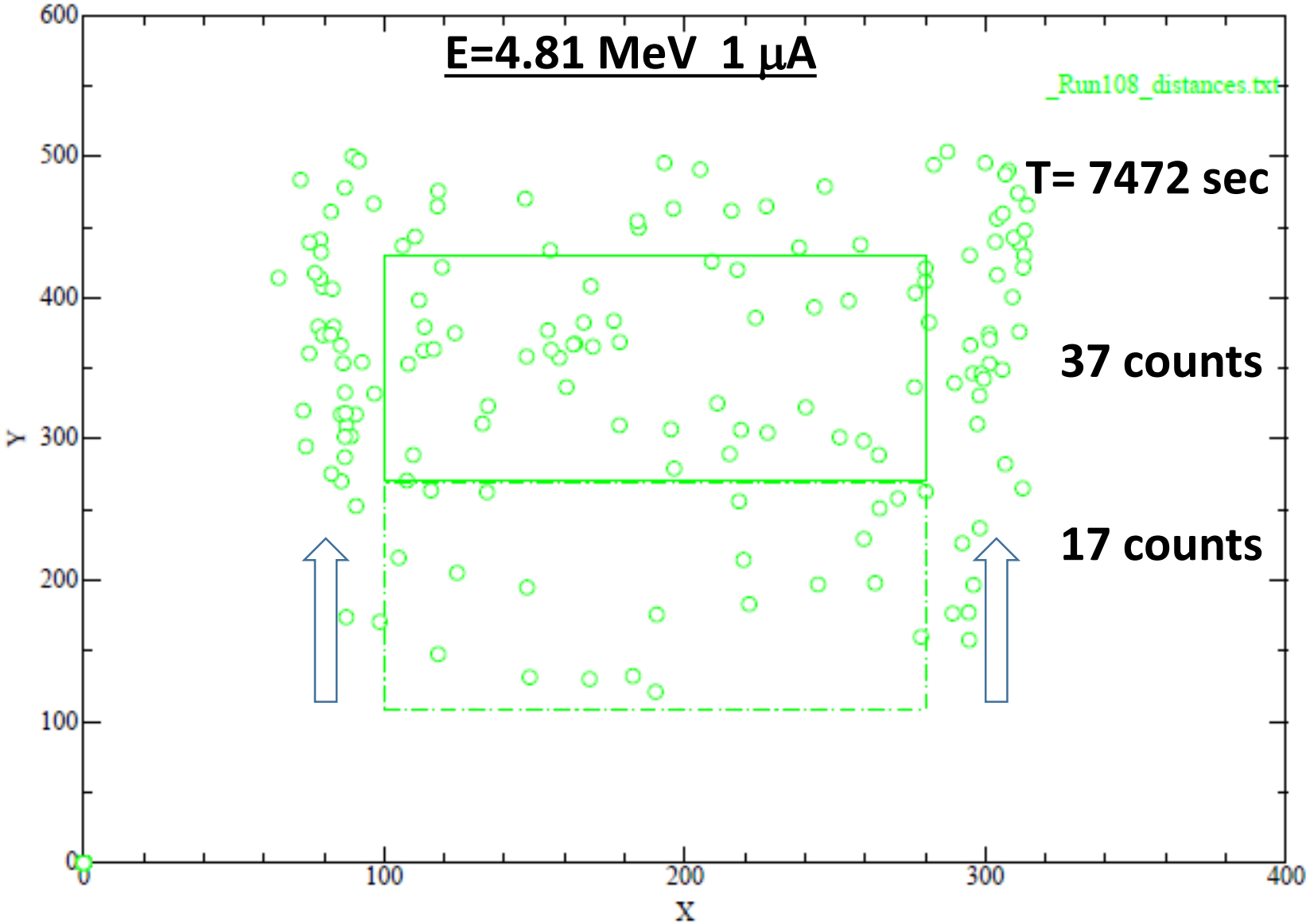
Status of paper:

I. Introduction
II. Experimental Details
    a) Single Fluid Bubble Chamber
    b) Production of Bremsstrahlung beam
    c) Beam energy, profile and current measurement
    d) Sources of Background events
III. Experimental Results
    a) distribution of bubbles at different energies
    b) extraction of cross sections (not final)
    c) comparison with previous measurements
IV. Summary and Future Plans


Cosmic Ray Background
no beam
_Run92.txt
T= 7222 sec
9 counts
8 counts
Y
X
0
100
200
300
400
500
600

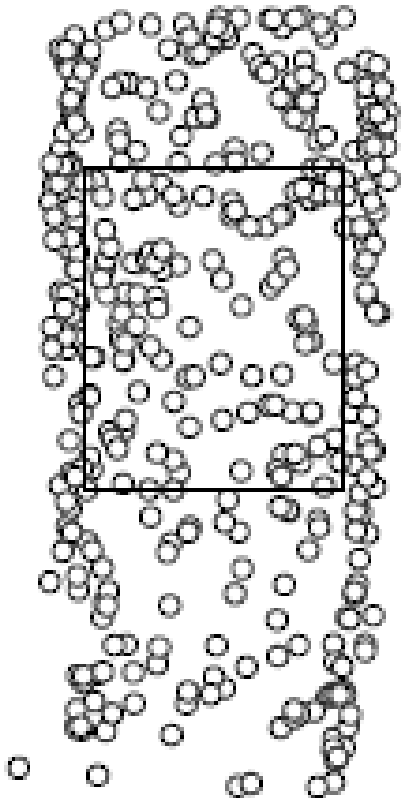


$\sigma \sim (T_{total} \sim 12 \text{ hrs}) \sim 50 \text{ pb}$

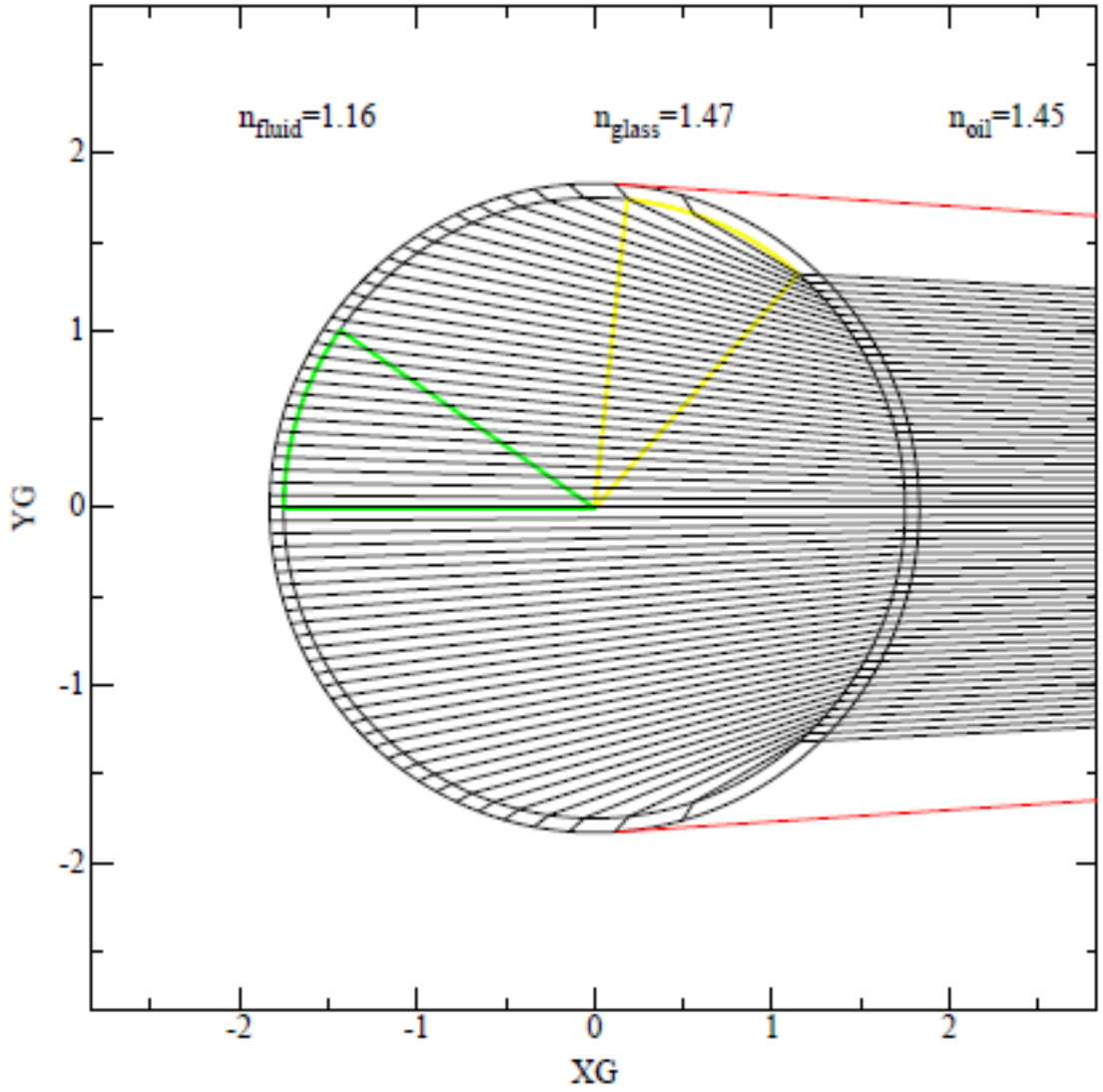
Origin of the “rabbit ears”

Glass vessel has 20% B

$^{10}B(n,\alpha)^{7}Li$ has kbarn cross sections

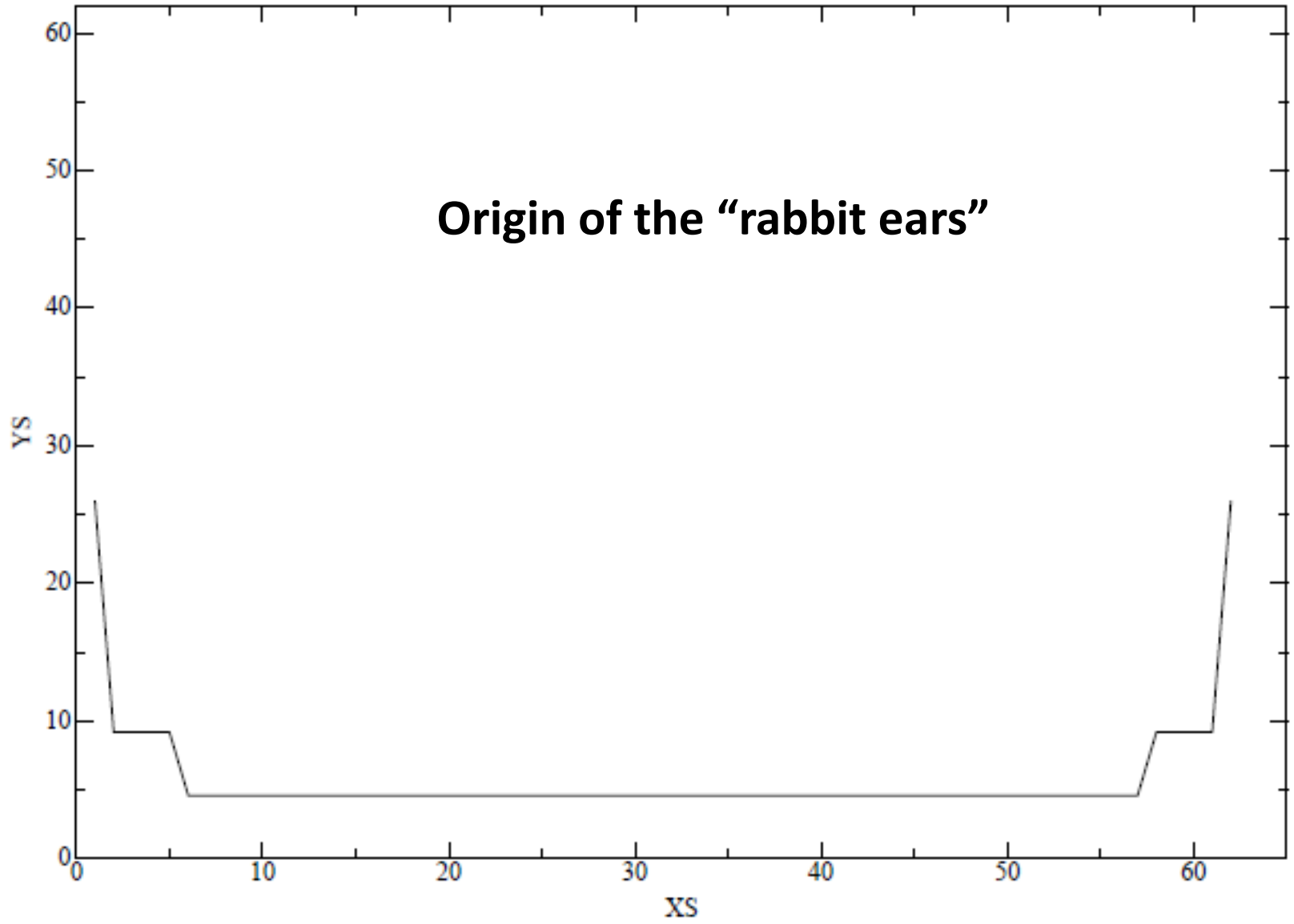


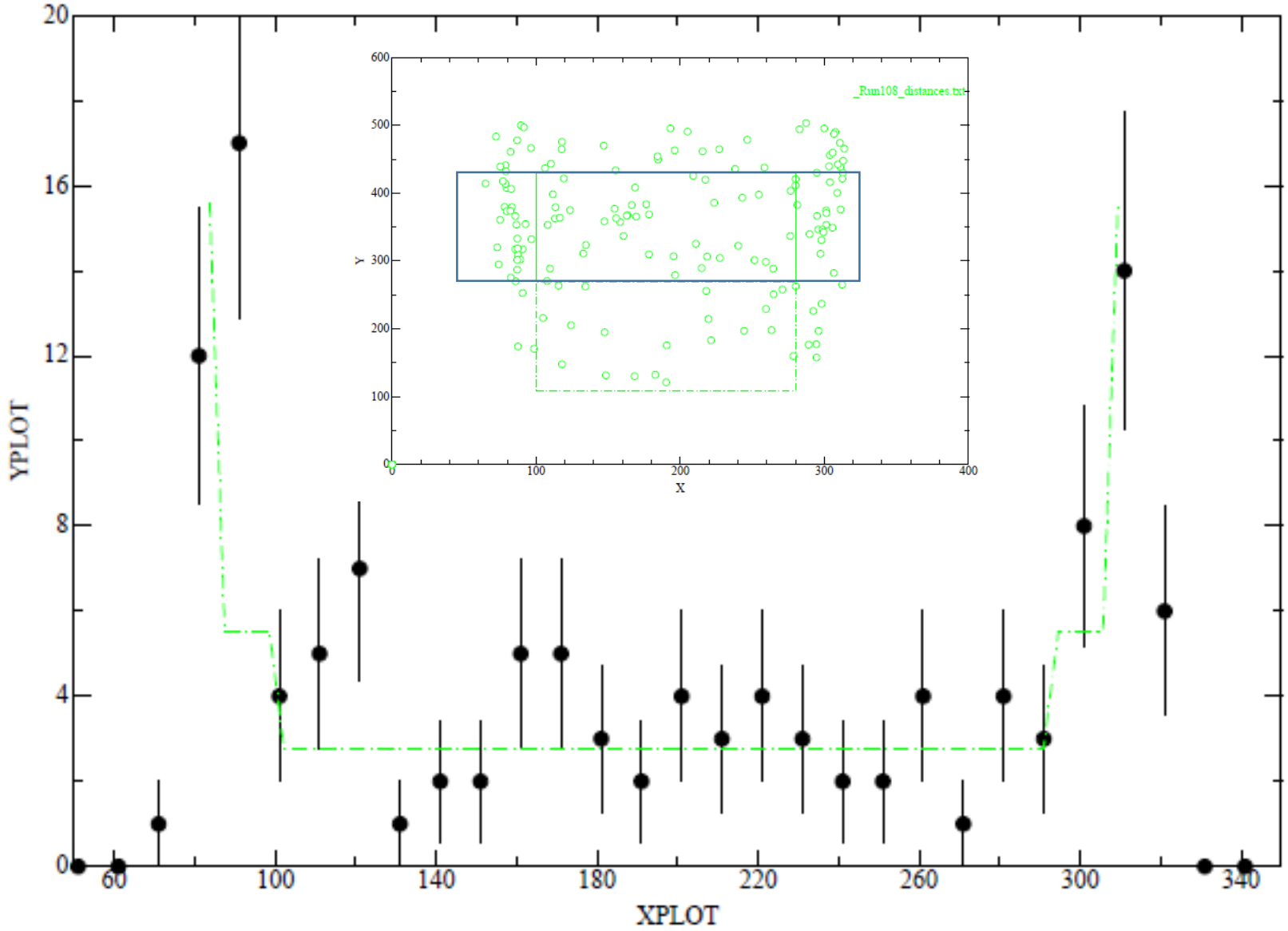
15 hrs /108



Camera

Origin of the “rabbit ears”




YPLOT
XPLOT
0
4
8
12
16
20
60
100
140
180
220
260
300
340
_Run108_distances.txt
Y
X
0
100
200
300
400
500
600

- **background rate from cosmic rates (no beam) in fiducial area: ~4 counts/hr**

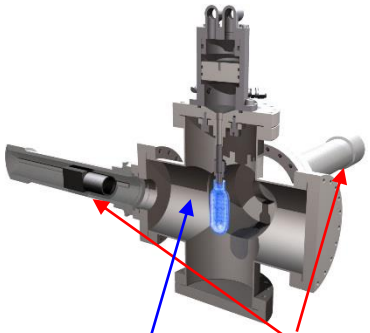
- **Beam-induced background rate with 1 μA: ~10-15 counts/hr**

- **$d(\gamma,n)p$ Q=-2.224 MeV, $^{10}B(n,\alpha)^{7}Li$ in the walls of the glass vessel (^{10}B has kbarn cross sections for thermal neutrons) $^{17}O(\gamma,n)^{16}O$ Q=-4.141 MeV in the SiO_2 of the glass**

- **Need oxygen and deuteron-free materials (d: 1.12×10^{-4} ^{17}O: 3.8×10^{-4}). B-free glass**

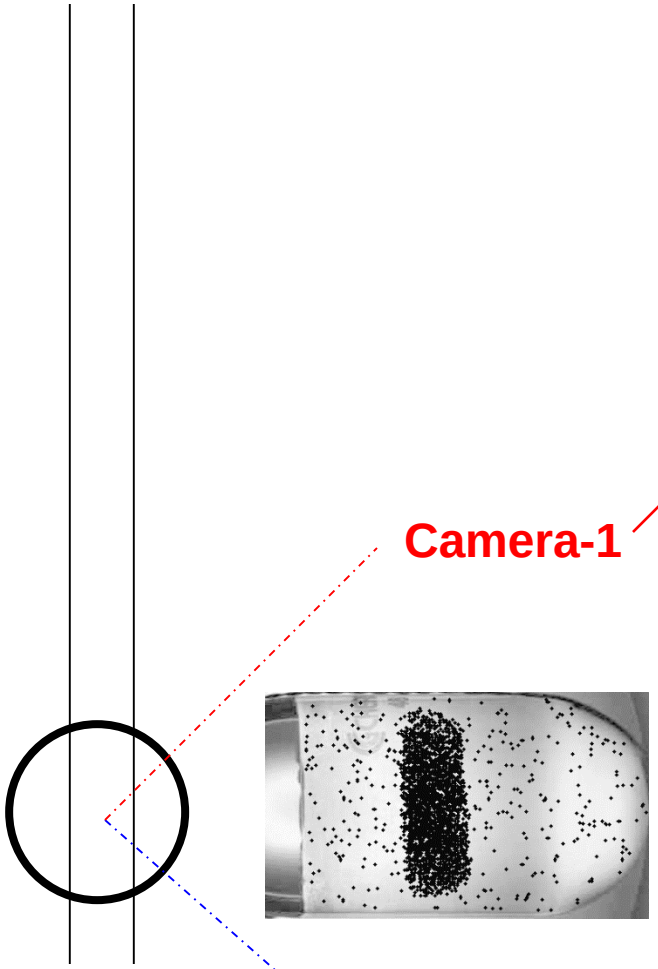
- **Need 3d pictures to eliminate all wall events.**

Position sensitivity in 3D at HIγS



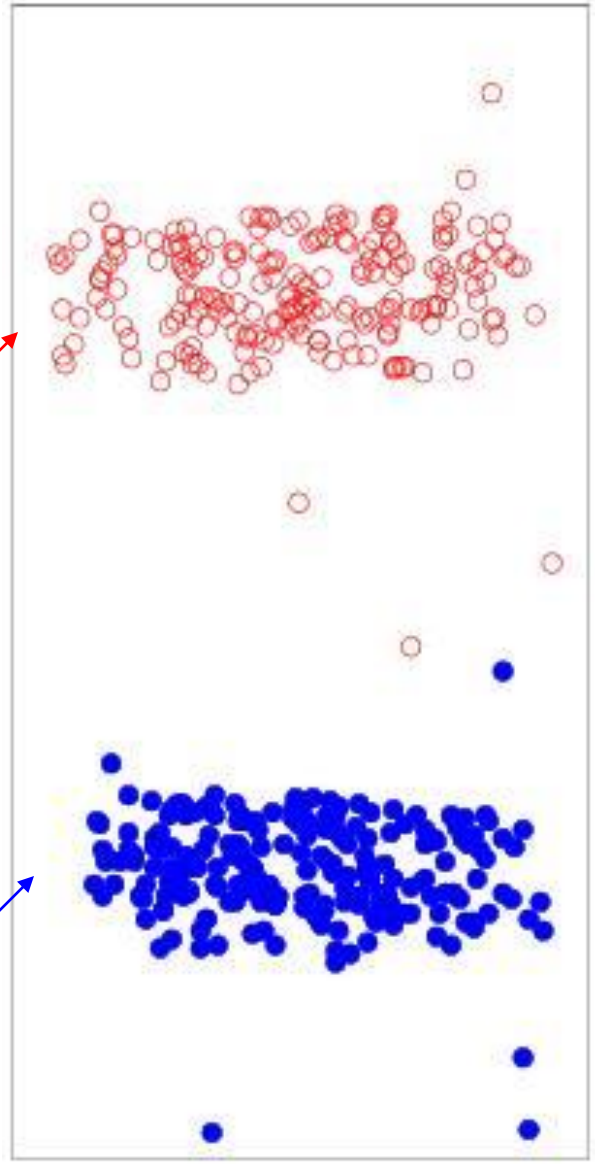
2 fast cameras

Air
no hydraulic fluid



Camera-1

Camera-2



Not corrected for refraction

Position sensitivity in 3D at HIγS