

Status of time slice simulation

A.V. Shipilova^{1,2}

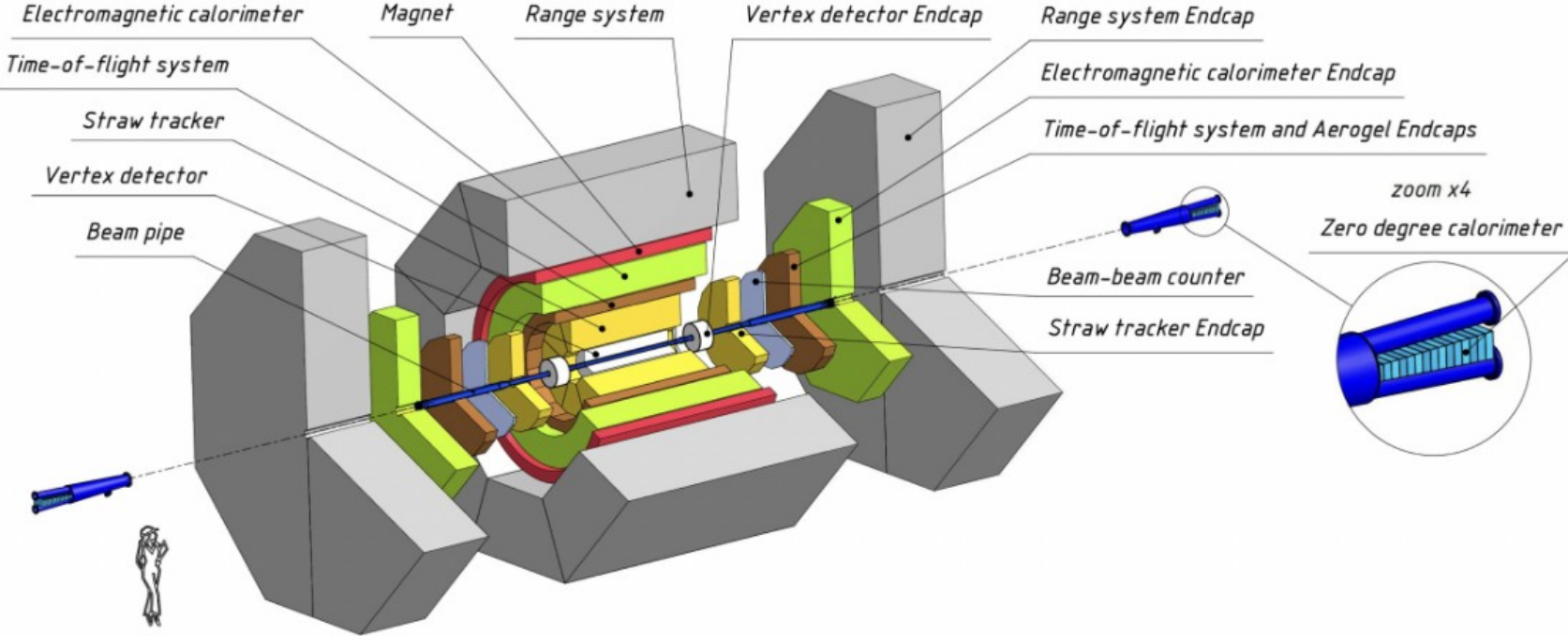
In collaboration with S.D. Morozova¹ and A.S. Zhemchugov²

SPD Collaboration Meeting, April 24-27, 2023

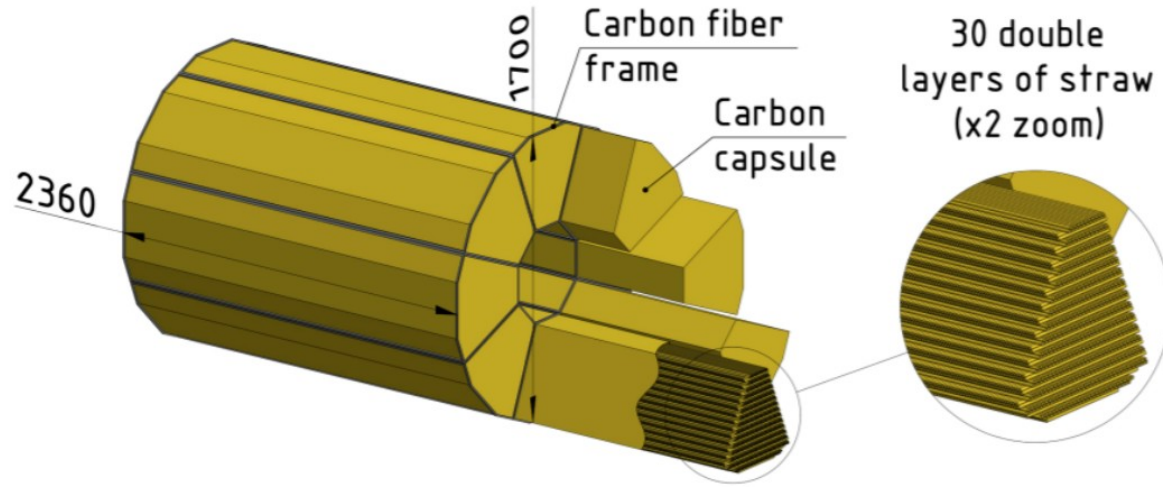
¹Samara National Research University

²Joint Institute for Nuclear Research

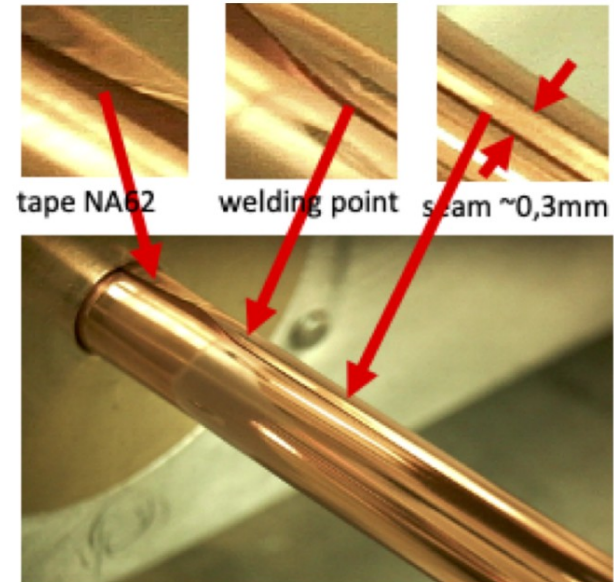
SPD detector



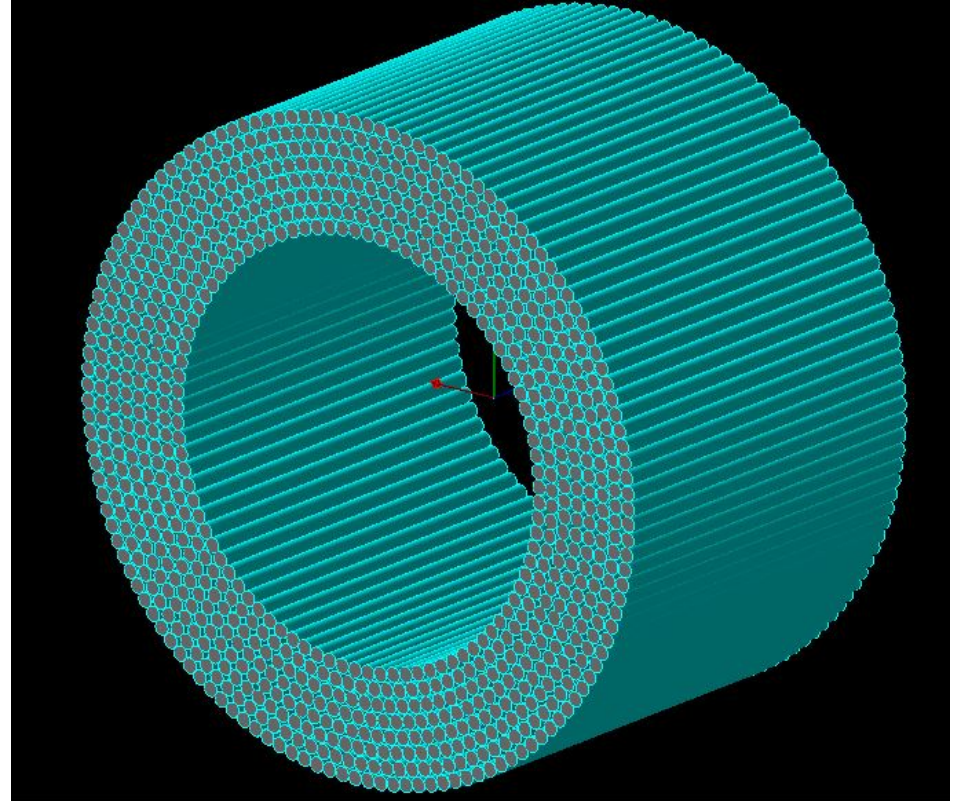
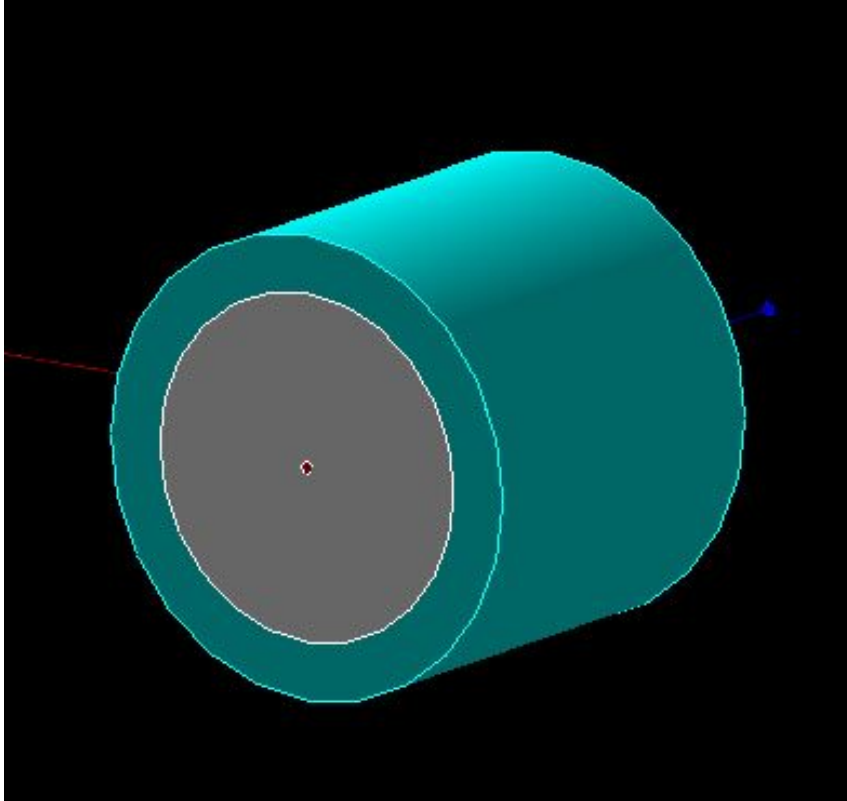
Straw tracker



22000 straw tubes
Nominal inner diameter: 9.8 mm
PET: $R = 0.036$ mm
Gas: CO_2 (30%) + Ar (70%)
Anode: Au-plated W, $d=30\mu\text{m}$



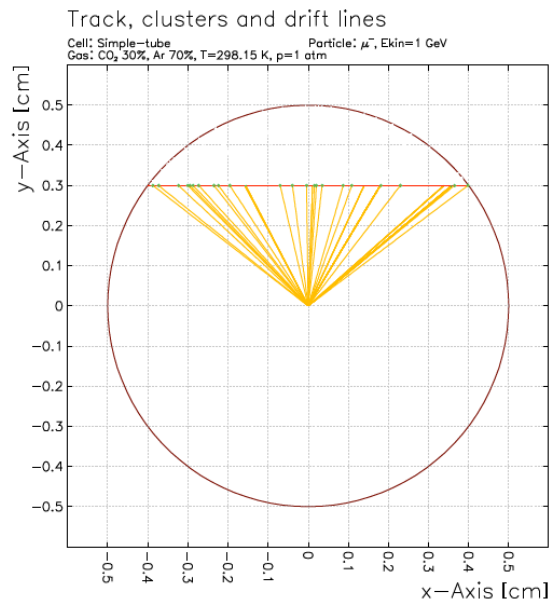
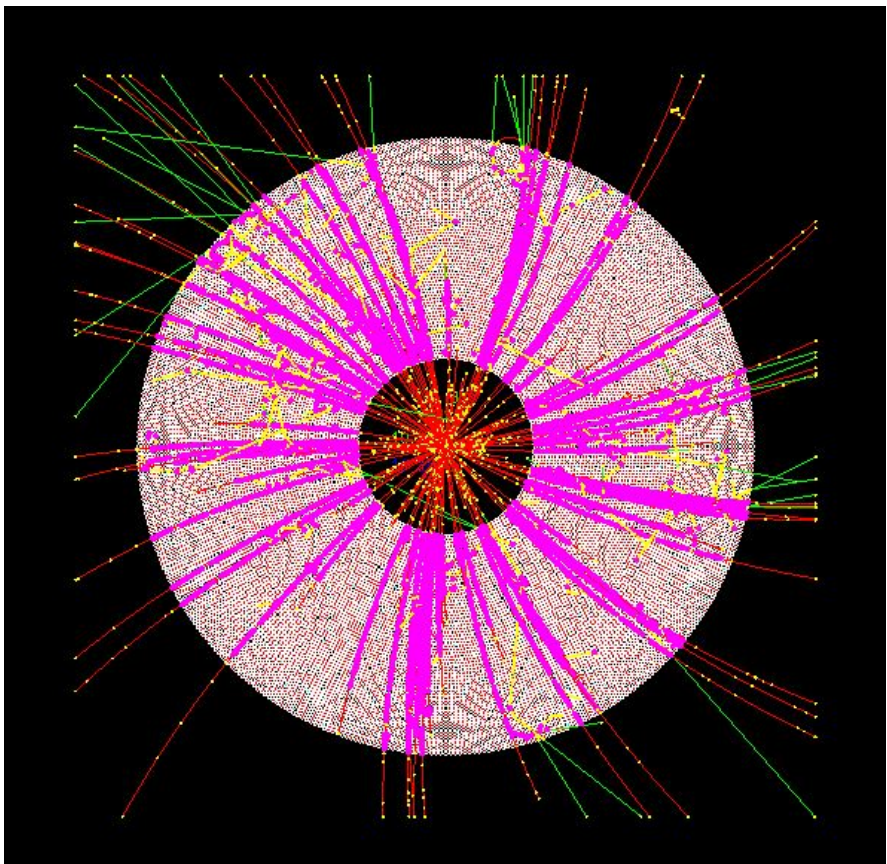
ST geometrical model



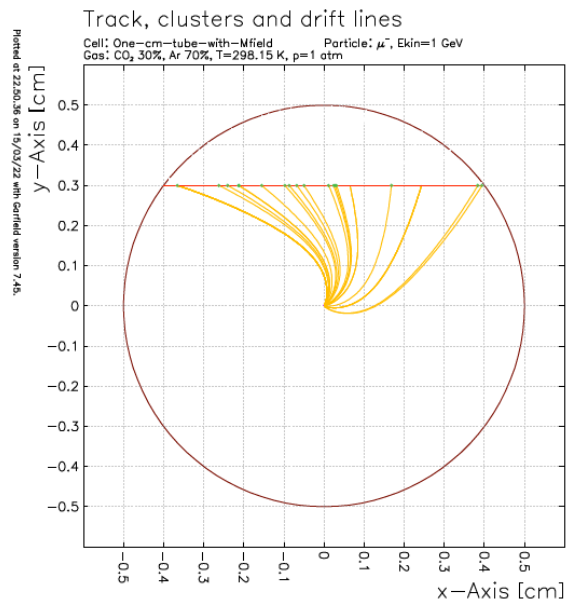
Model parameters

- Time slice: 10 mcs
- p-p mode: bunch crossing 76 ns
- Consider the interaction point in the origin of coordinate system
- Model primary particles: μ^-
- Number of primary particles: Poisson distribution with $\lambda=0.3$
- Uniform random momentum distribution of primary particles
- $E = 1 \text{ GeV}$
- Magnetic field: $B_z = 1 \text{ T}$

Hits collections



(a)



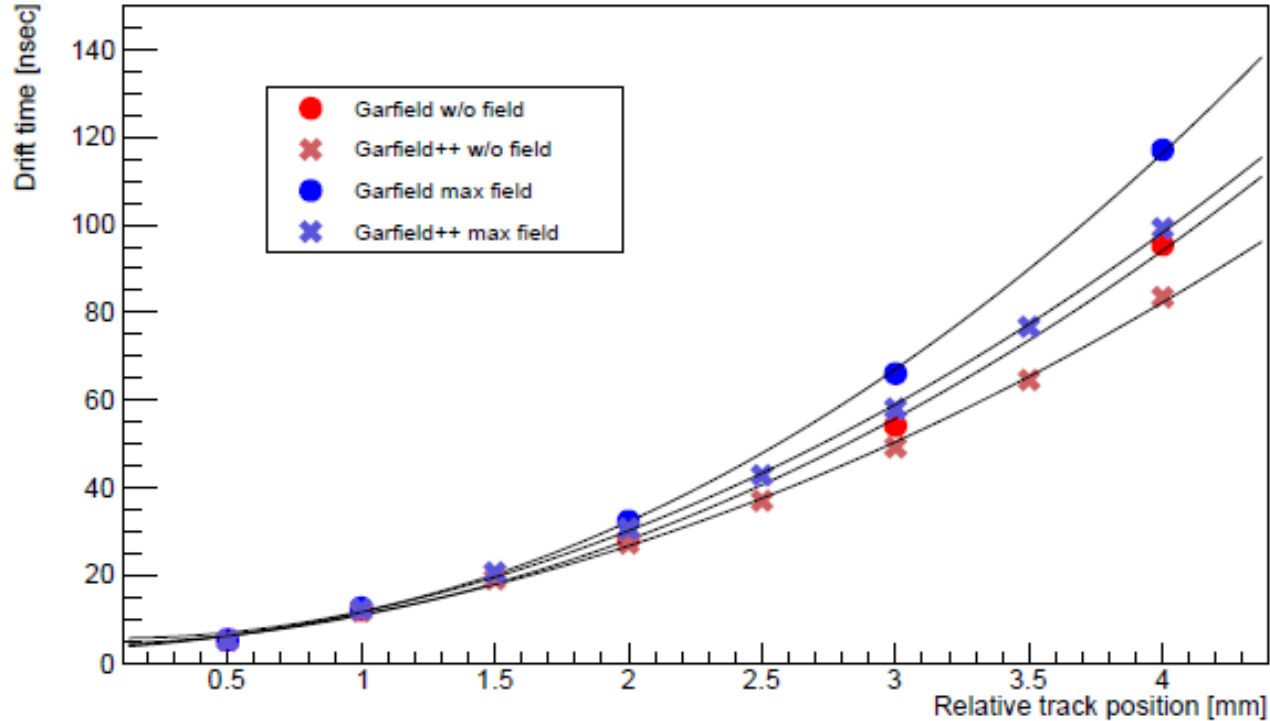
(b)

Plotted at 22:50:36 on 19/03/22 with GeField version 7.4b.

Plotted at 22:52:40 on 19/03/22 with GeField version 7.4b.

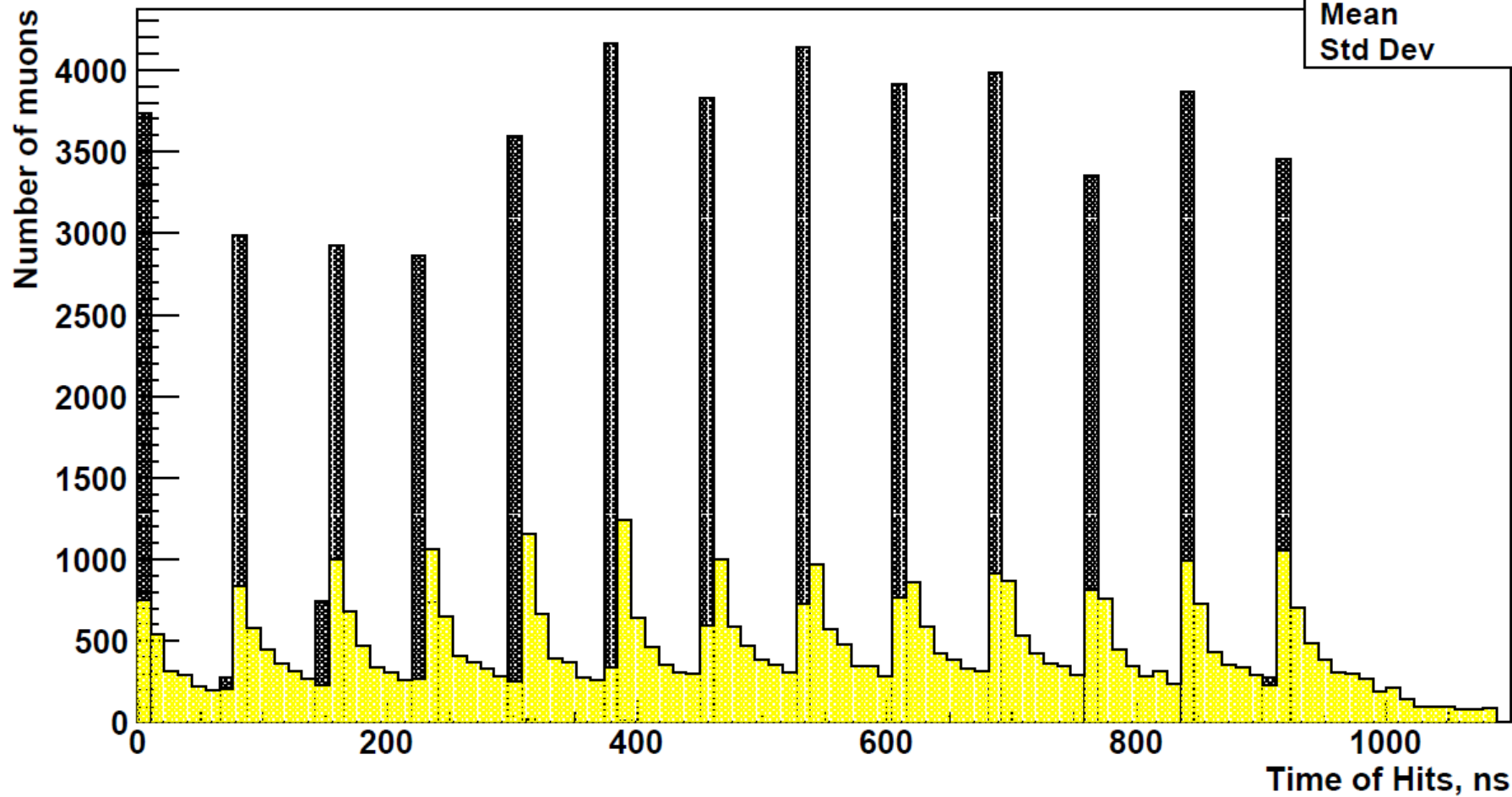
First cluster drift time

Landau MPV

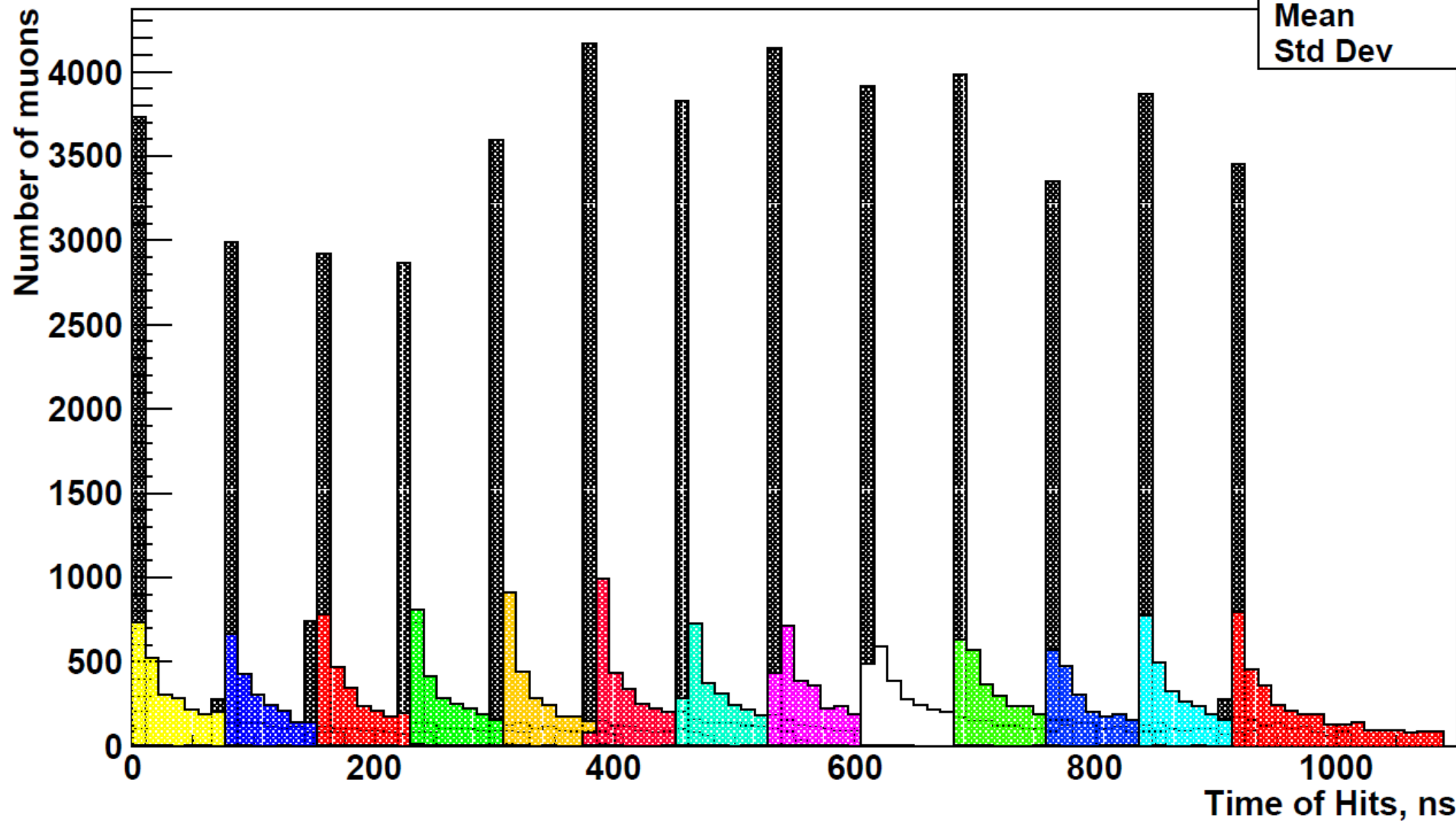


$$t(r) = 2.7101 + 1.2156 r + 6.8287 r^2$$

Timing distribution



Timing distribution



Thank you for your attention!