Production of secondary particles on the Forward Spectrometer beam pipe

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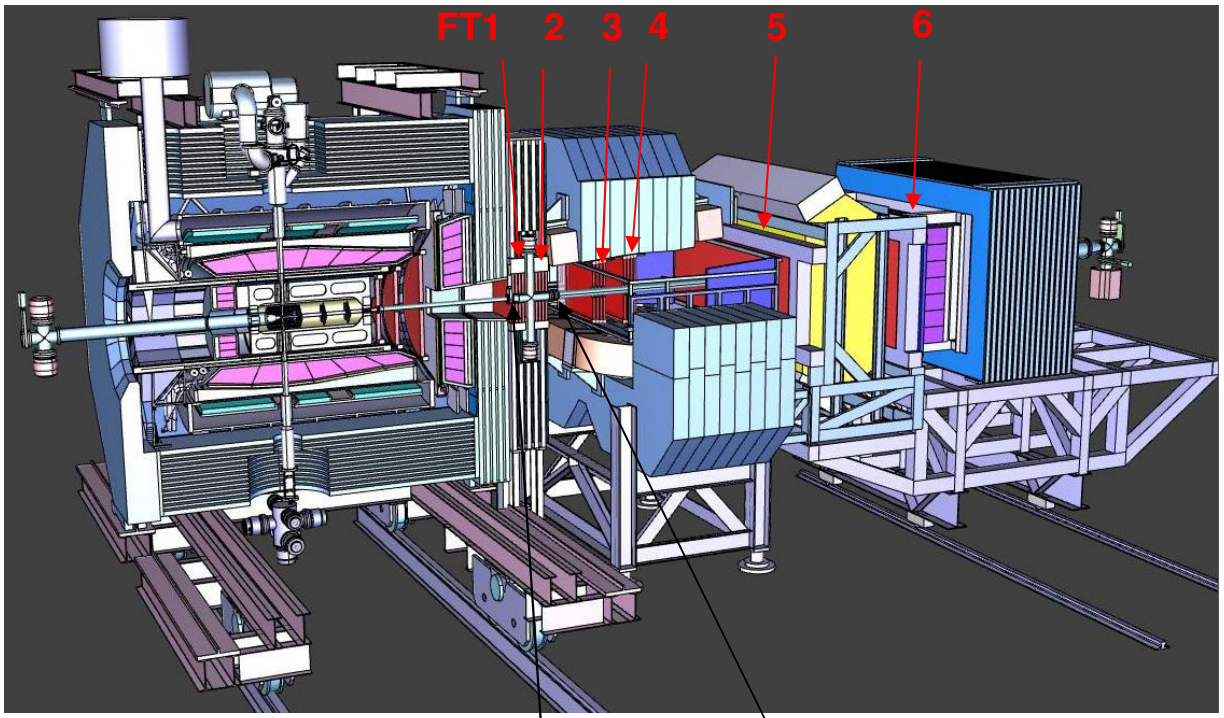
Forward Tracker



Valve
and
flanges
bofore FT1

Valve
and
flanges
after FT2

Simulations

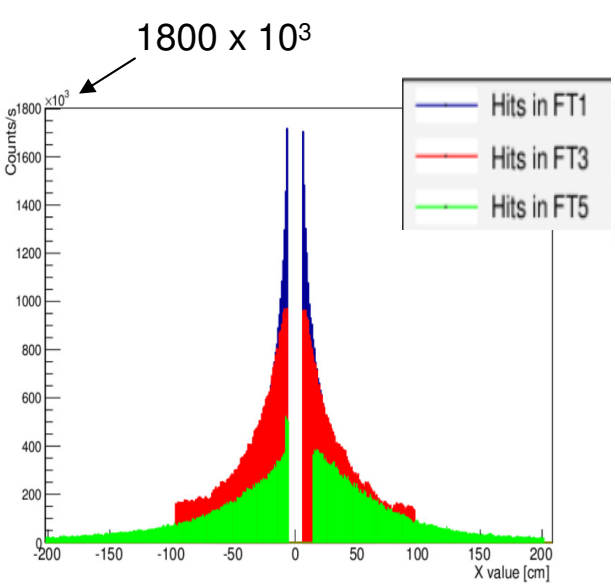
- pbar-p at 15 GeV/c
- interaction rate: 2×10^7 /sek.
- reactions: DPG model + elastic scattering

Studied scenarios

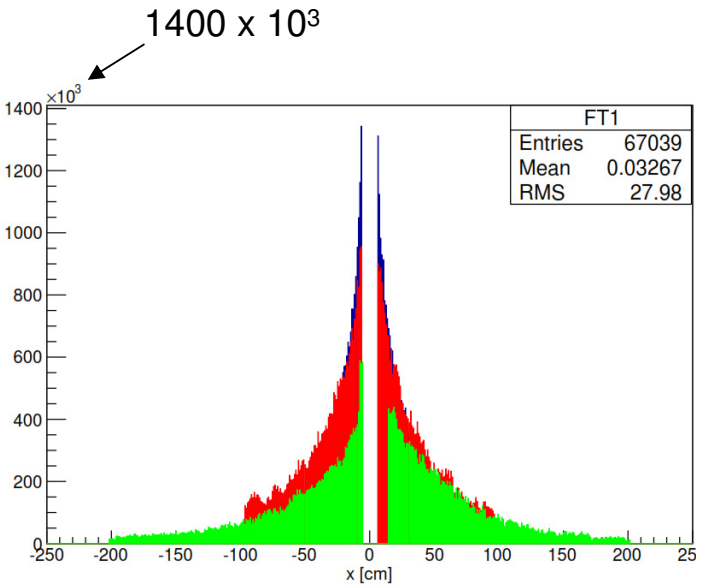
1. **Full setup**: beam pipe + flanges + valves
2. **Beam pipe only** (removed: flanges + valves)
3. **Without beam pipe** (removed: beam pipe + flanges + valves)

Counts/straw/sek.

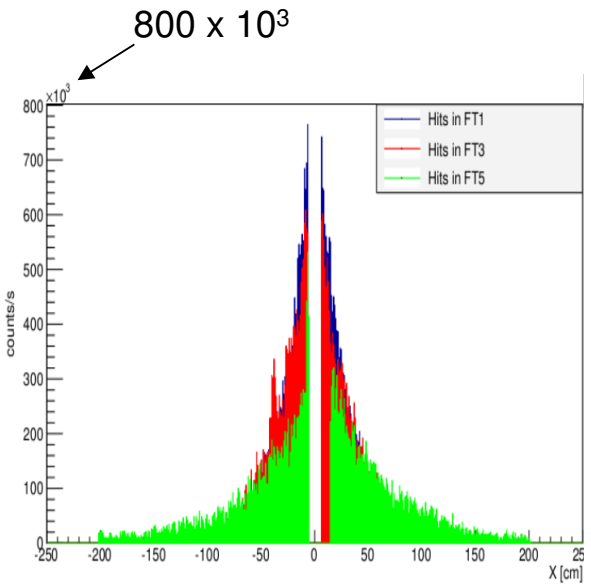
Full setup



Beam pipe only

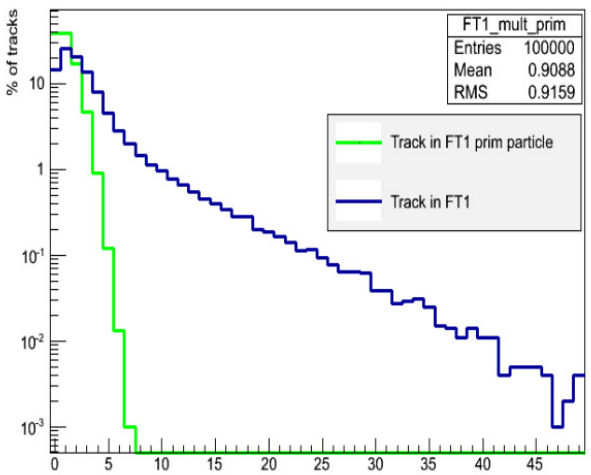


Without beam pipe

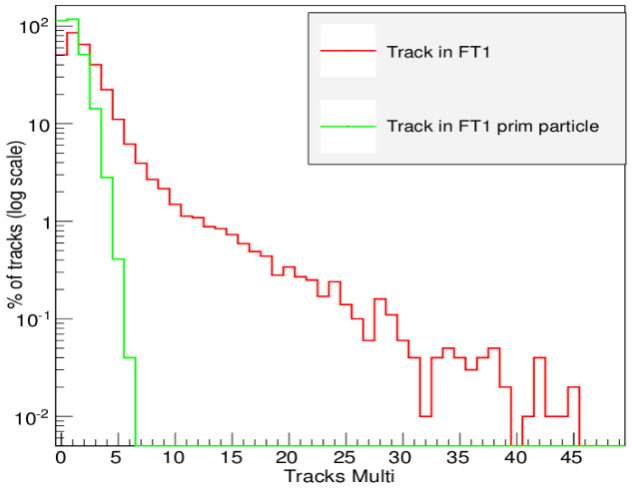


Track multiplicity in FT1

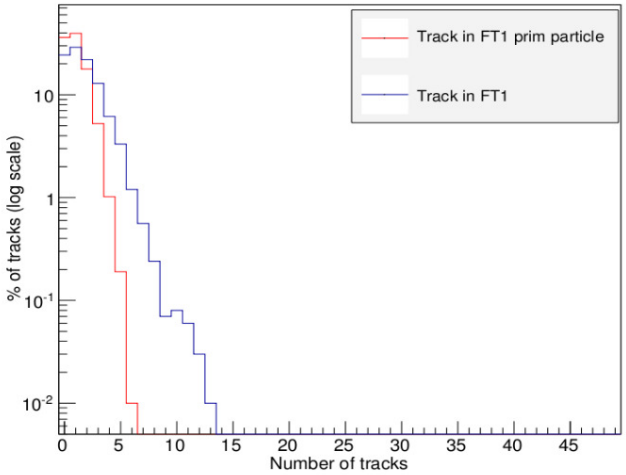
Full setup



Beam pipe only

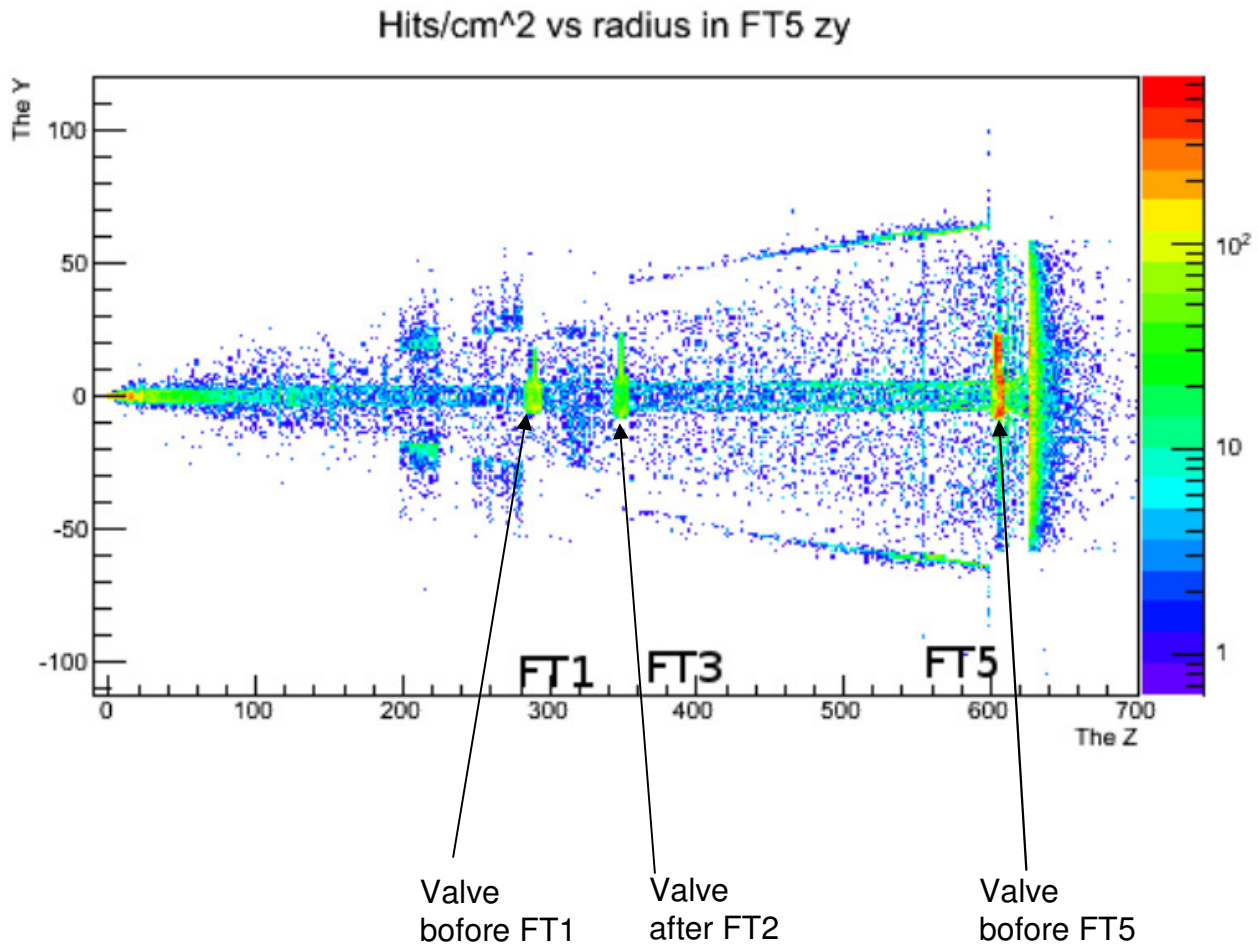


Without beam pipe



Production of secondaries

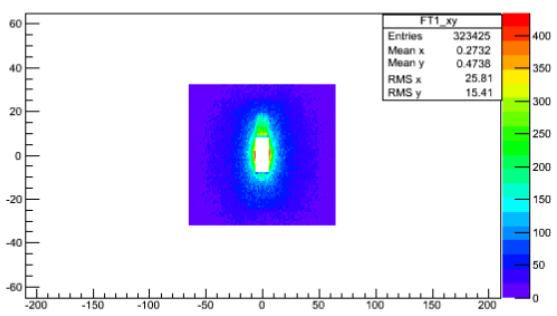
Full setup



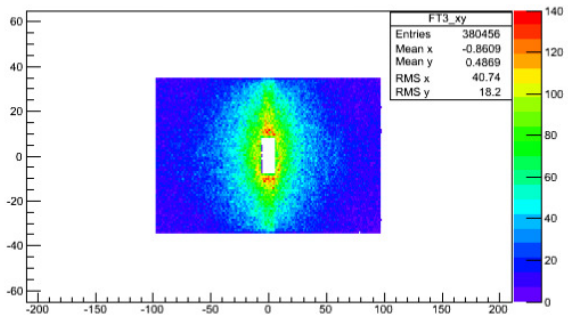
Counts/cm^2

Full setup

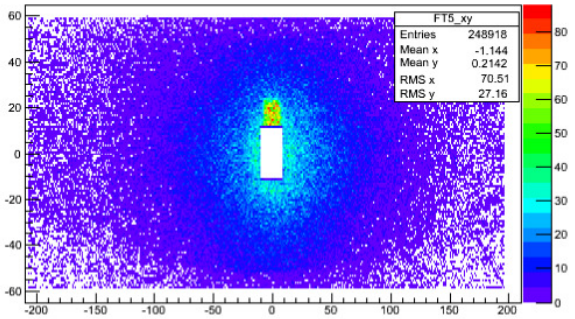
FT1



FT3



FT5



Conclusion

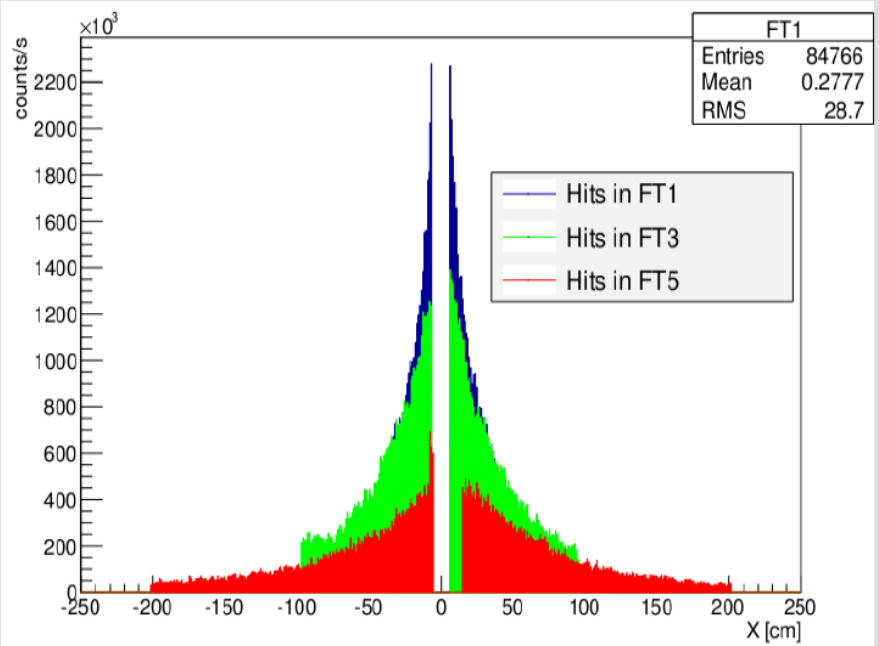
- Production of secondary particles on the beam pipe and flanges increases the counting rate in the central region of the FT1, 2 from 0.8 MHz to 1.8 MHz

  (with a drift time of 130 ns, occupancy increases from 10% to 23%).

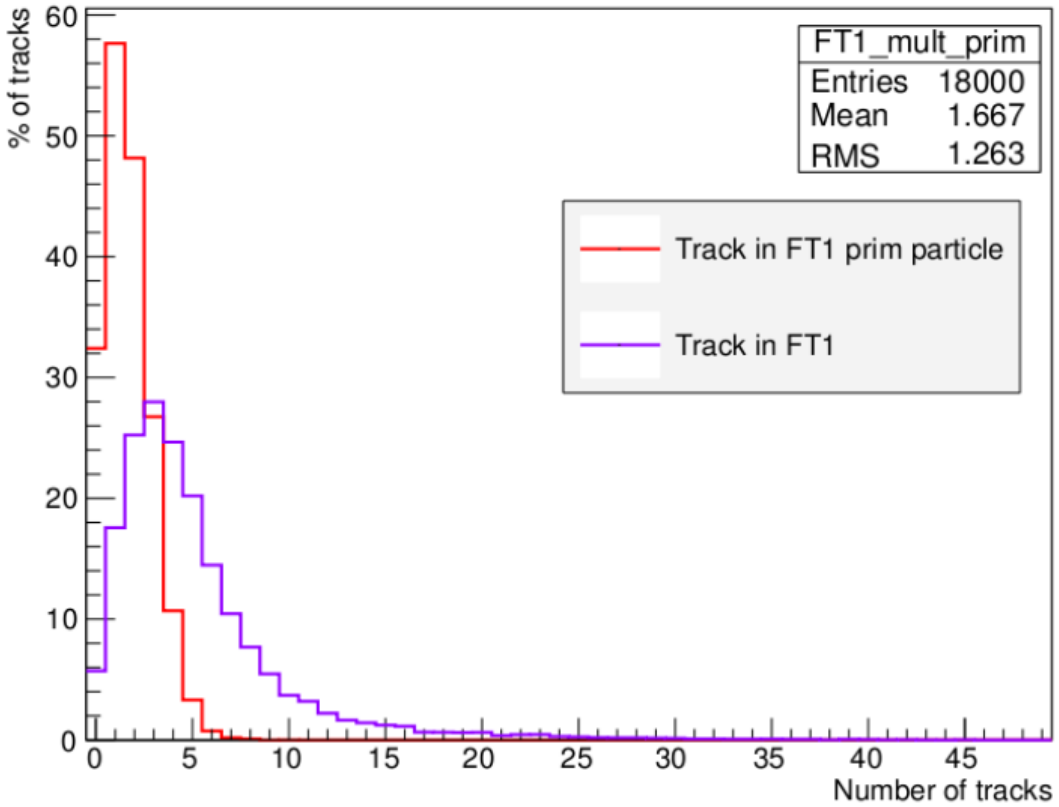
Backup slides

- pbar-N at 15 GeV/c
- interaction rate: 2x10^7 /sek.
- Reactions: UrQMD

Pbar-N (with beam pipe)



pbar-N


FT1_mult_prim
Entries 18000
Mean 1.667
RMS 1.263
Track in FT1 prim particle
Track in FT1
% of tracks
Number of tracks
0
10
20
30
40
50
60
0
5
10
15
20
25
30
35
40
45