Beam summary in 2011.Dec

Continuous beam operation in MR Run 39

- We have neutrino beam operation in 2011.Dec (MR Run39)
  - Monitor check, Beam tuning&study
  - Continuous beam operation (12/26) → possible to use for physics analysis
- At Run39, no horn operation
- Check the beam condition in this period.

Good spill selection

1. Physics run
   1. "run_type" is "physics run" and all Horn ON
   2. exclude spills for beam tuning, beam study
2. Trigger Flag is "Beam Trigger" (it means that beam during MC operation)
3. Good GPS Status
4. CT05 # of protons/spill > 1e11 in order to exclude spills which no beam in MR(due to machine interlock, etc...)

Apply only these cut →
"Quick beam summary"

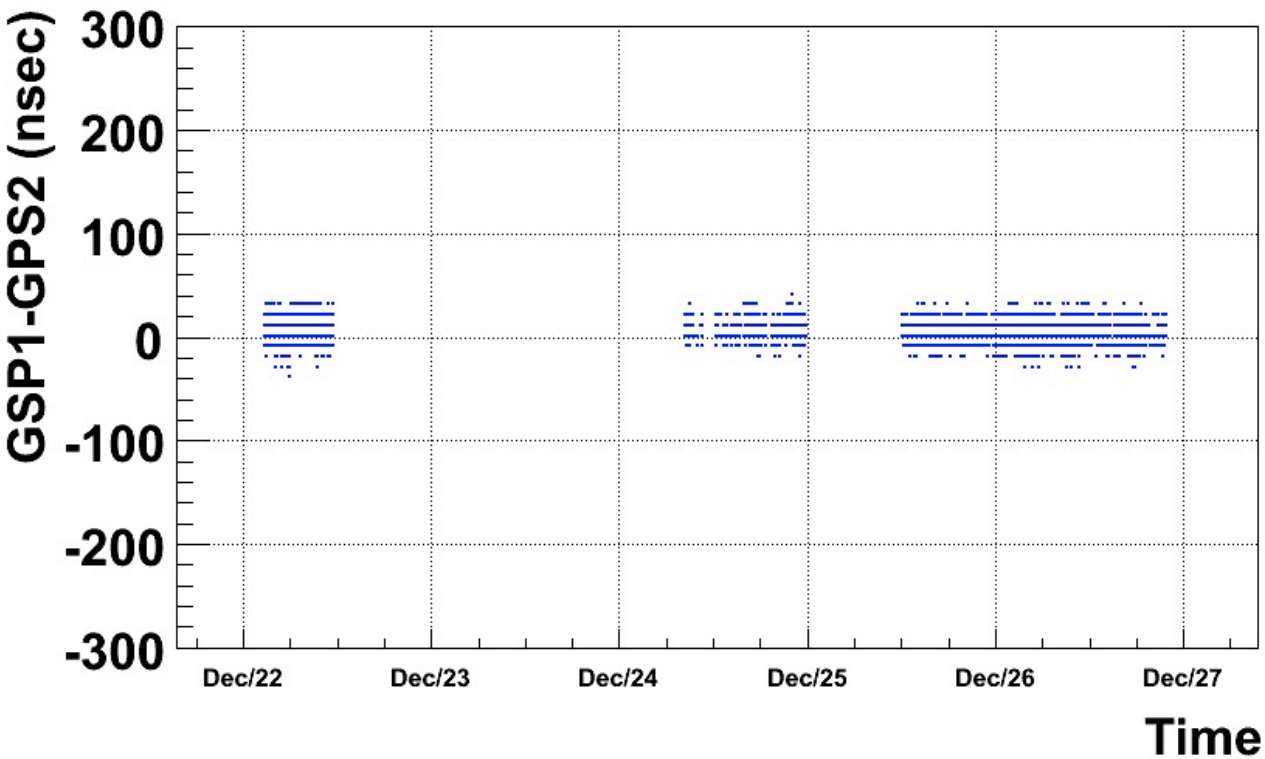
5. Normal condition cut
   1. exclude unusable spill (e.g. PV2 unstable, etc...)
6. Horn cut
   1. nominal ± 5kA for all three Horns

Horn cut not used in MR Run39(&40)

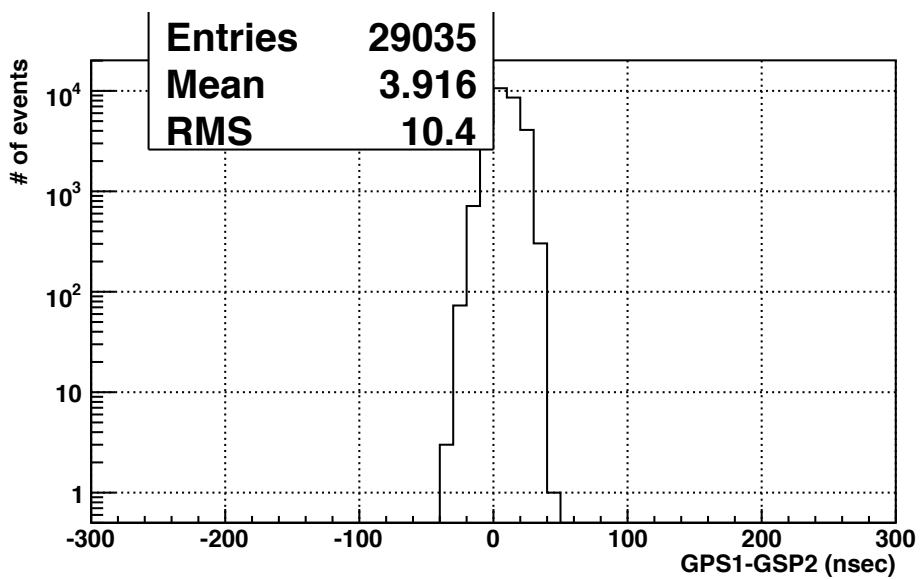
7. MUMON cut
   1. beam angle at MUMON within 1mrad (abs(Si fit x) < 10cm and abs(Si fit y) < 10cm)
   2. Si total Q / CT05 cut : nominal ± 5%

GPS2 - GPS1 (in Run39)

Graph



No spills with bad GPS status

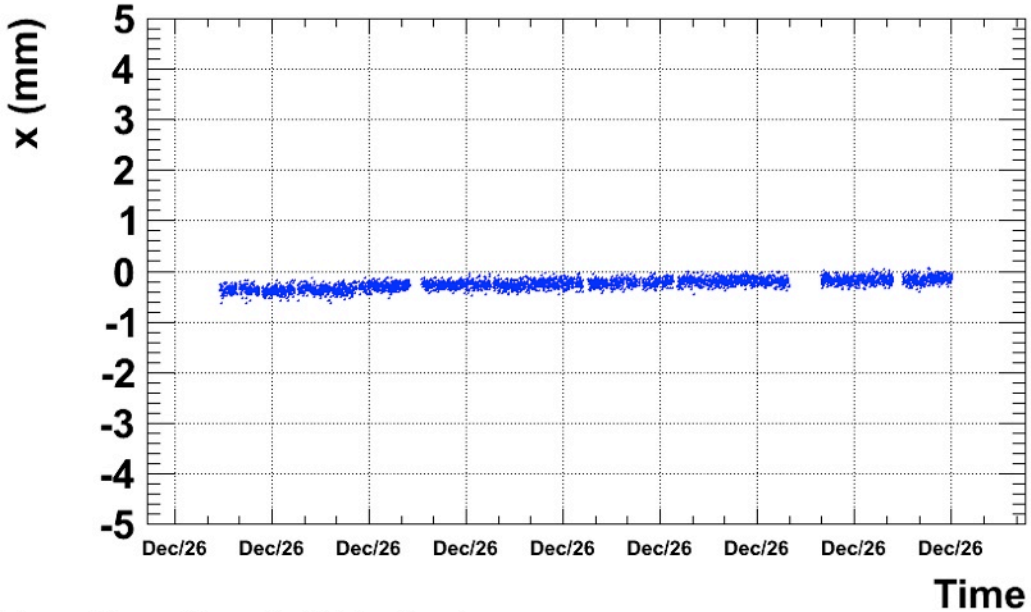


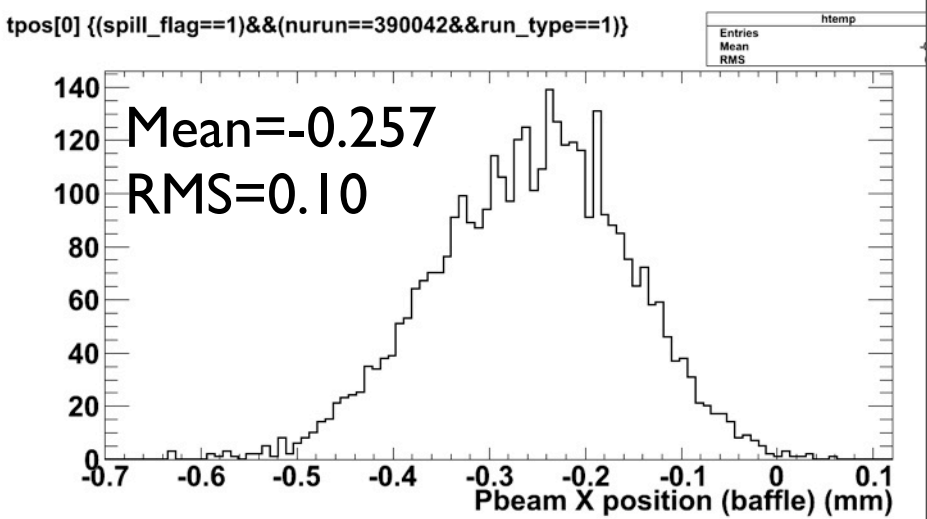
GPS stable in whole period.

→ No spill failed by GPS spill selection

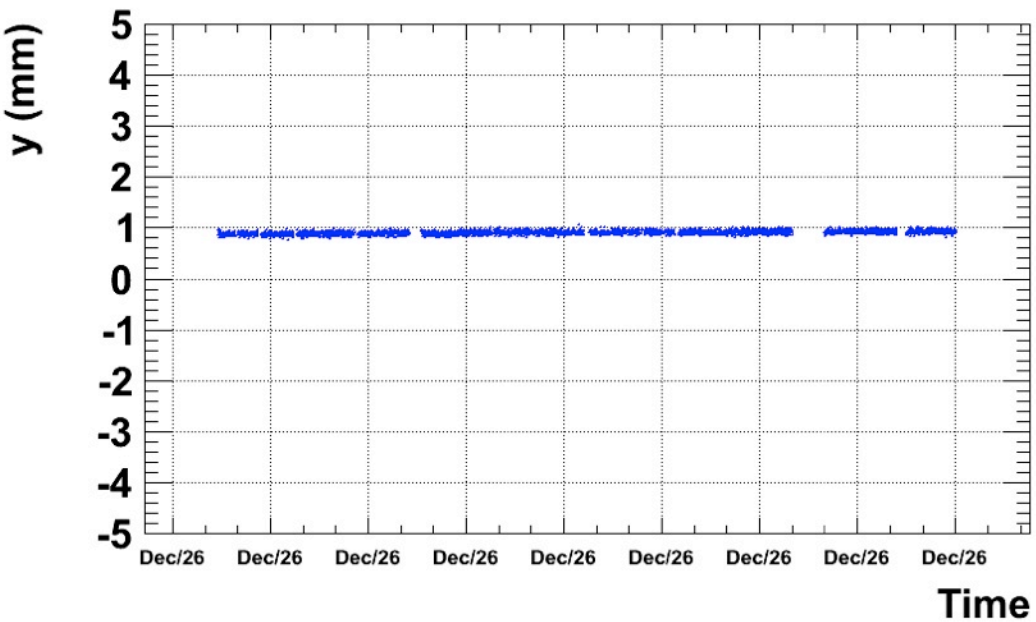
Proton beam center position

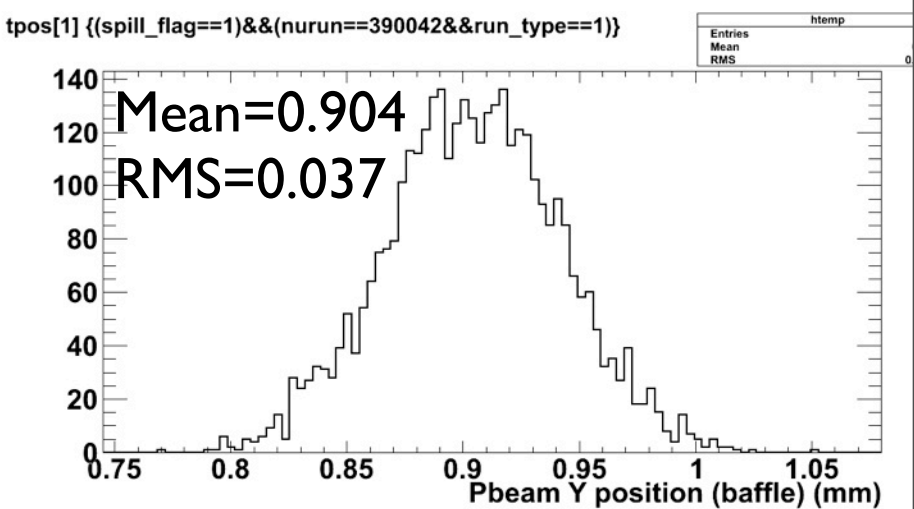
Beam X position (baffle), physics run





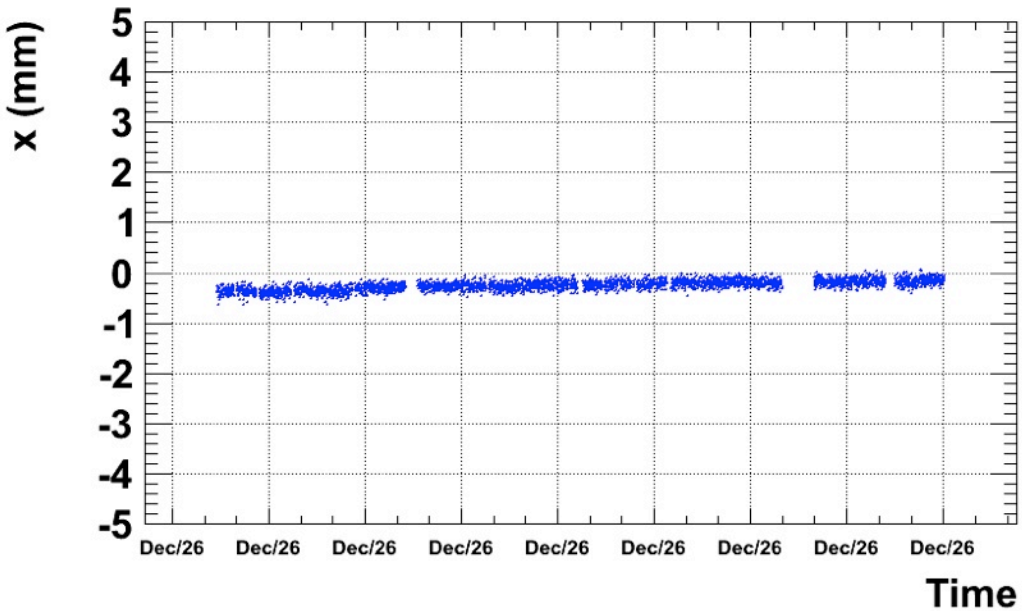
Beam Y position (baffle), physics run

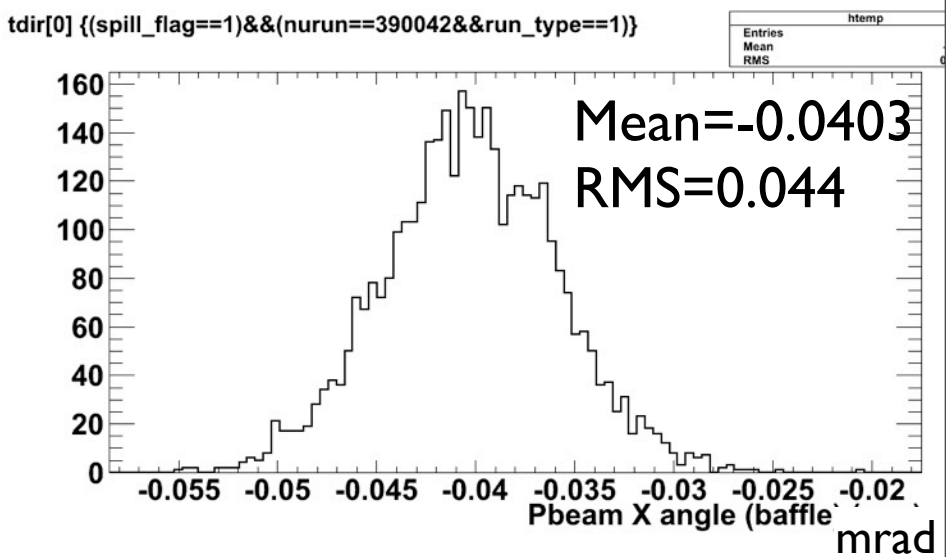




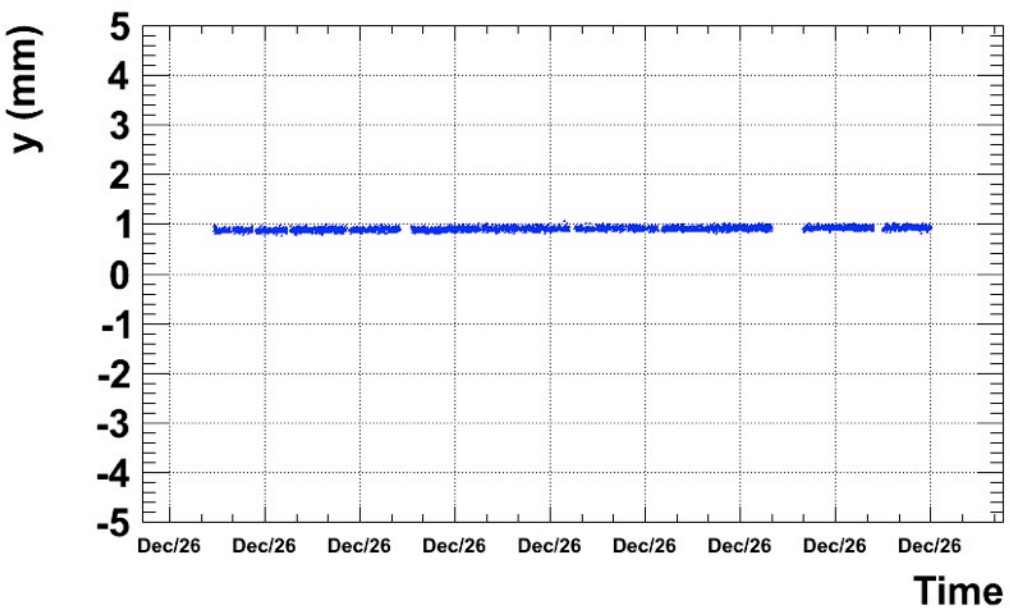
Proton beam center angle

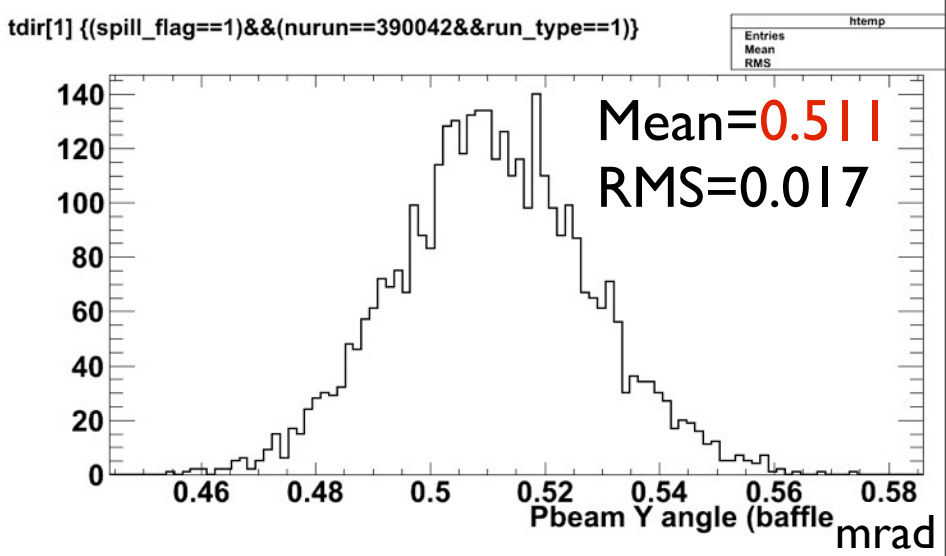
Beam X position (baffle), physics run



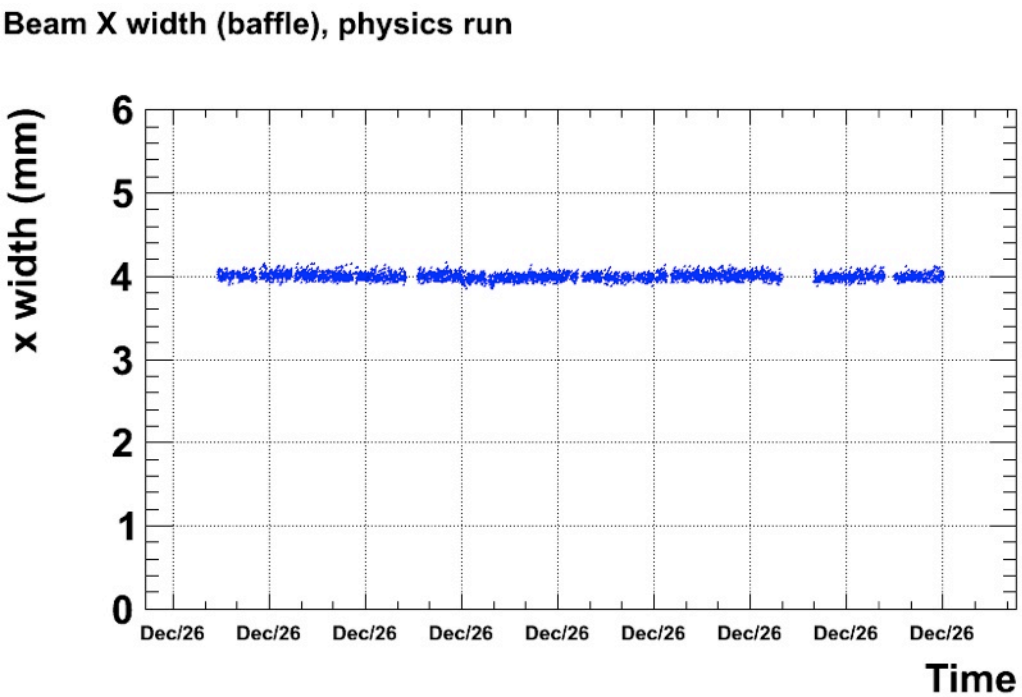


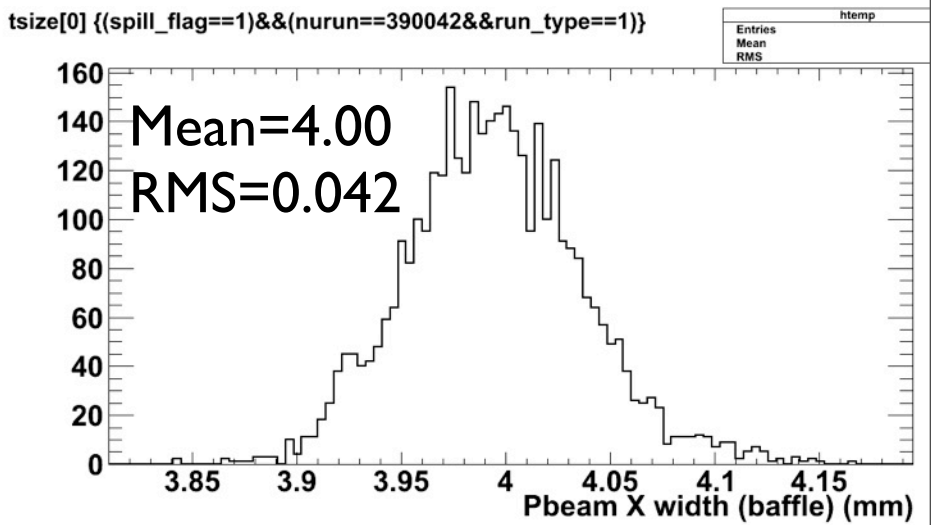
Beam Y position (baffle), physics run

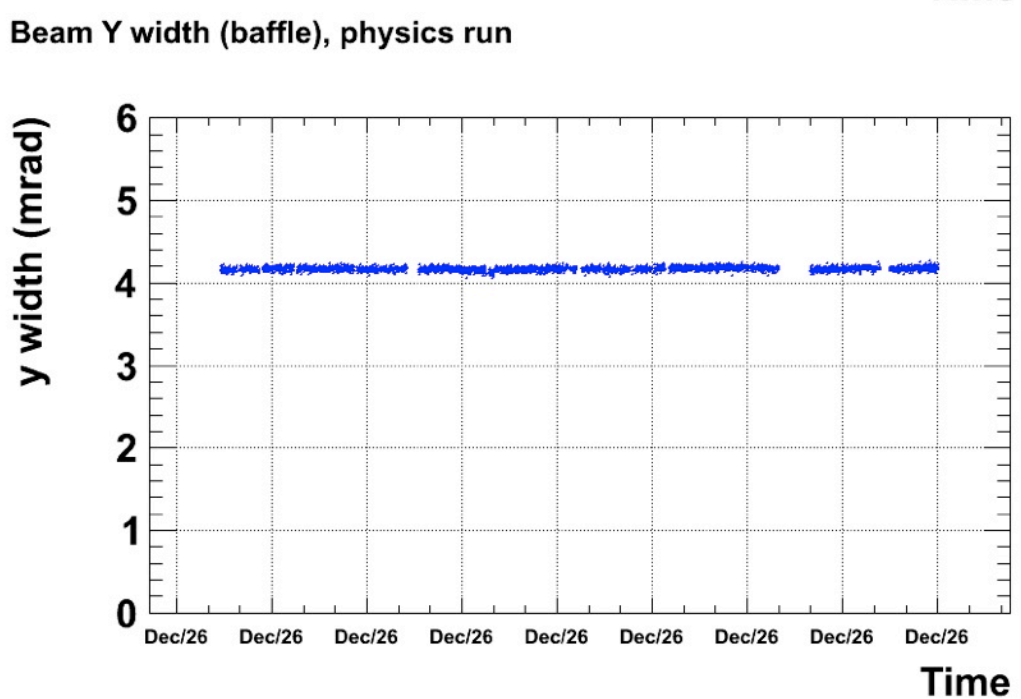


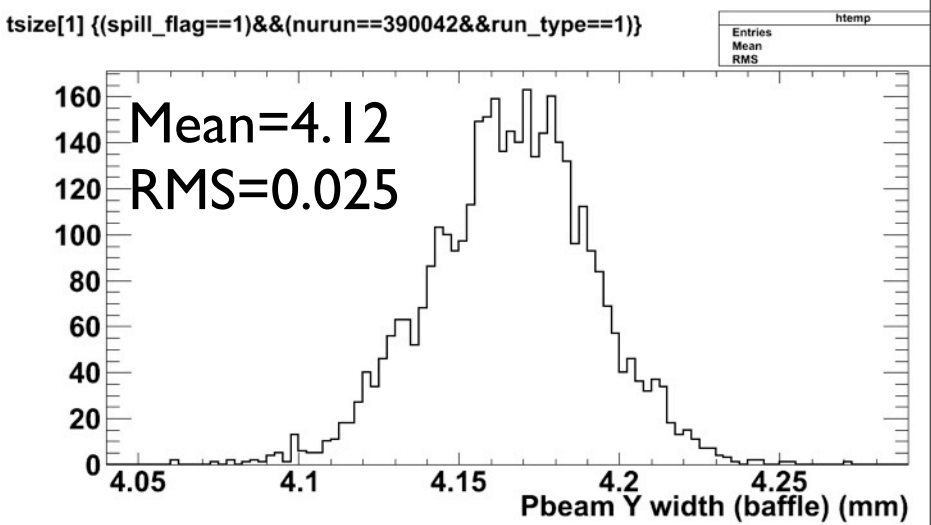


Proton beam center size

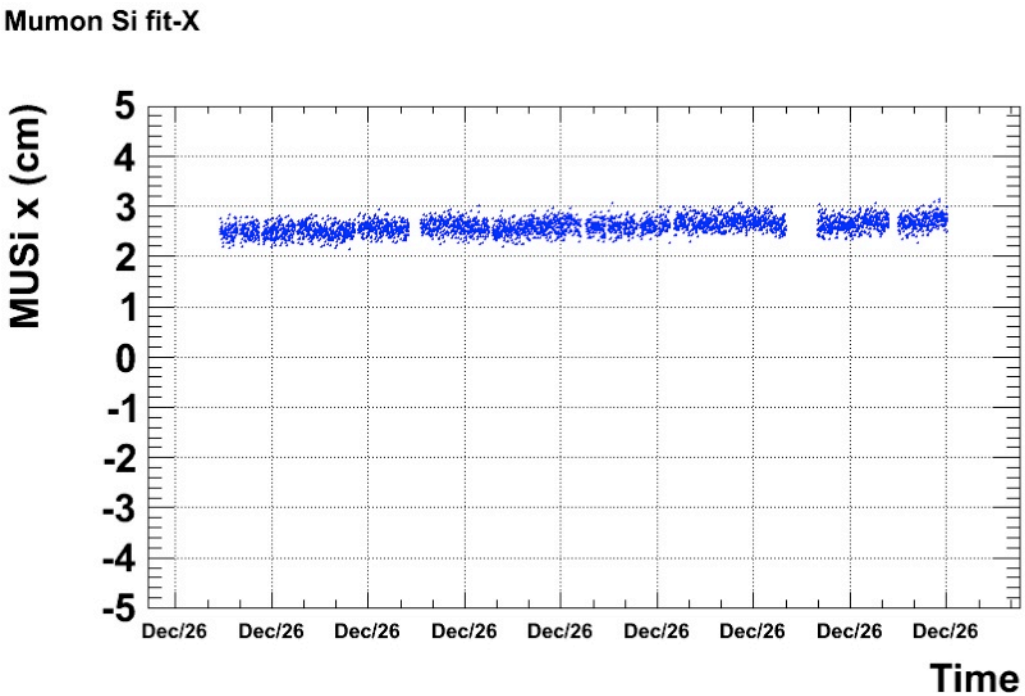


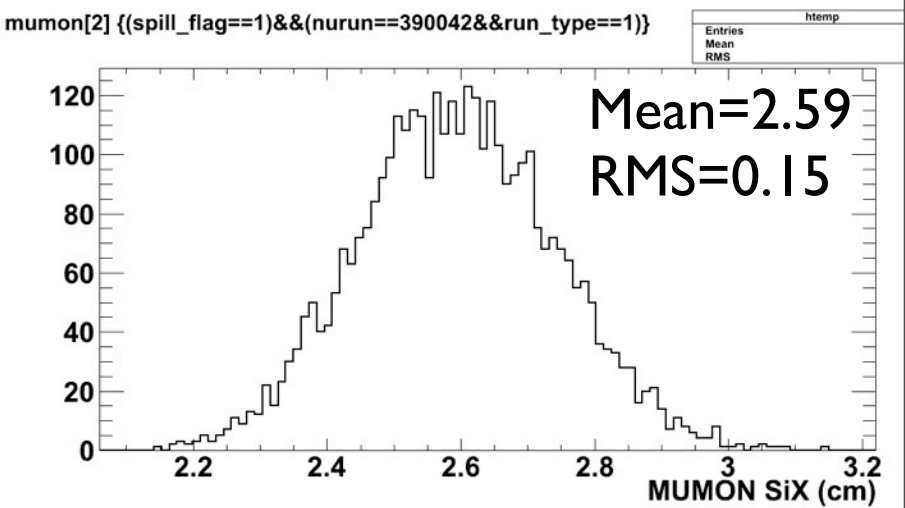


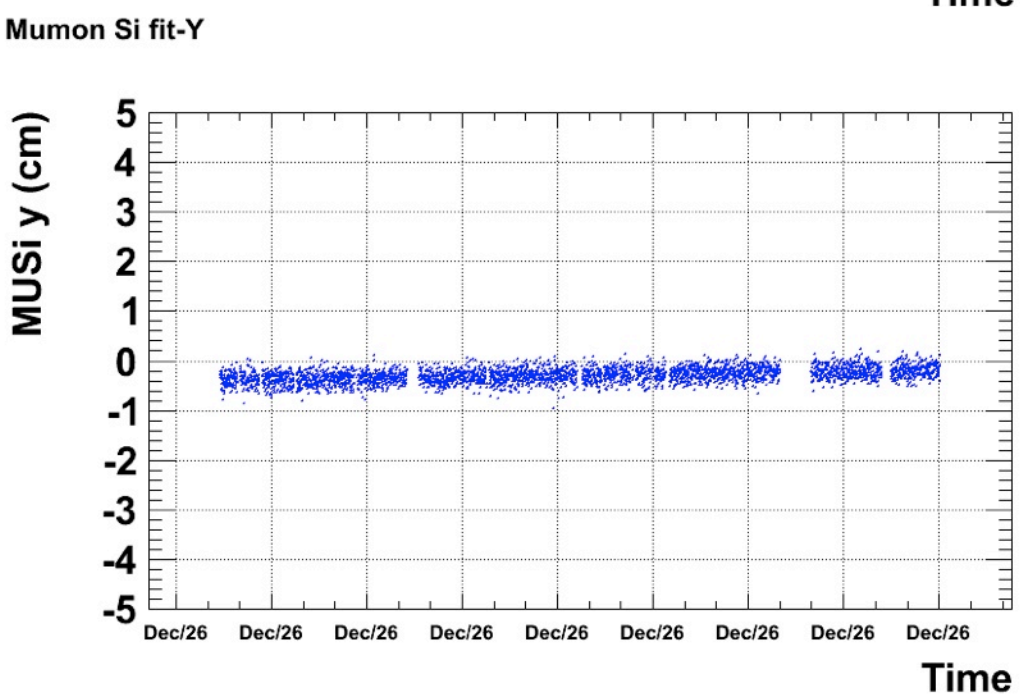


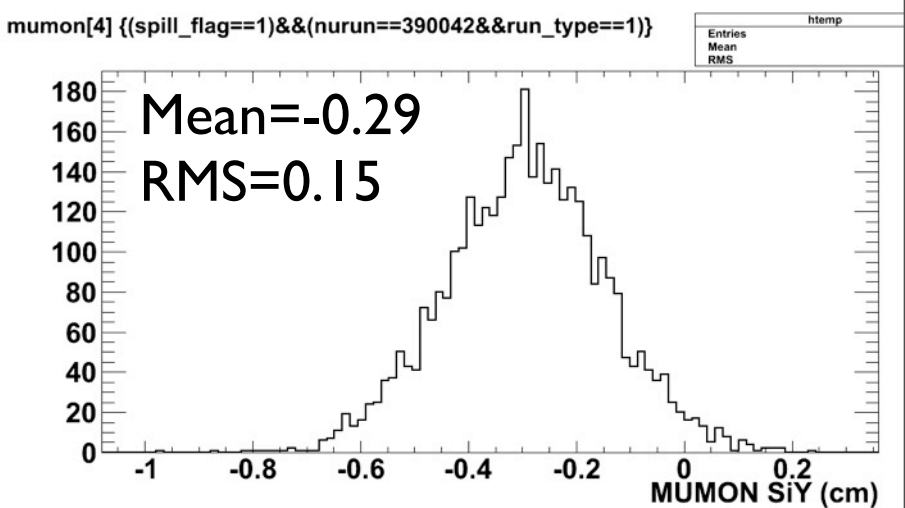


MUMON Si beam profile center



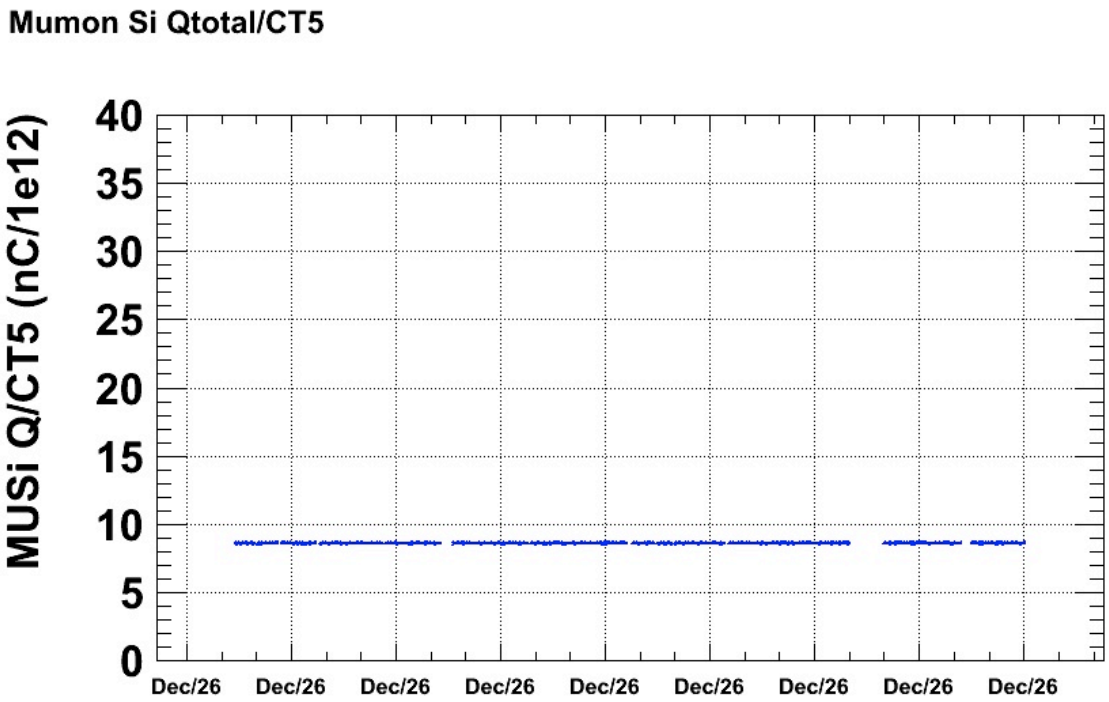


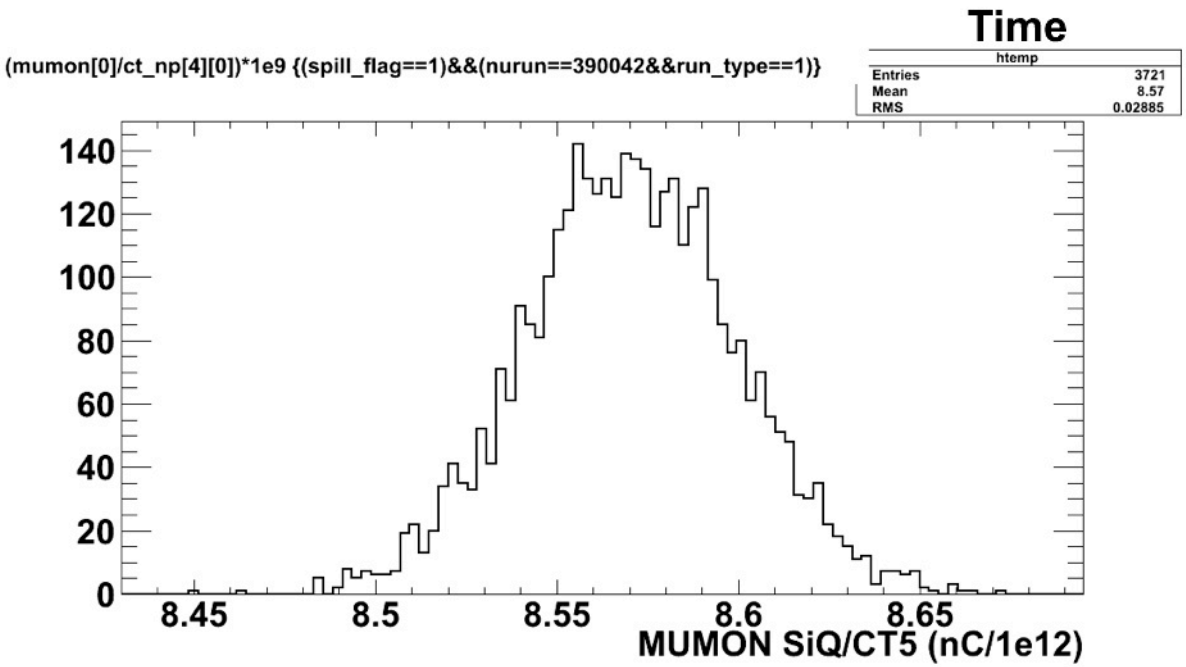




|All fitted center| < 10cm → OK

MUMON Si total Q/CT5





Mean=**8.57**
RMS=0.029(0.3%)

→ No spills failed by MUMON Si / CT5 cut (nominal ± 5%)

MUMON Si/CT5 cut in MR Run39
= 8.57 ± 0.43(5%)

Summary of Run39 continuous run

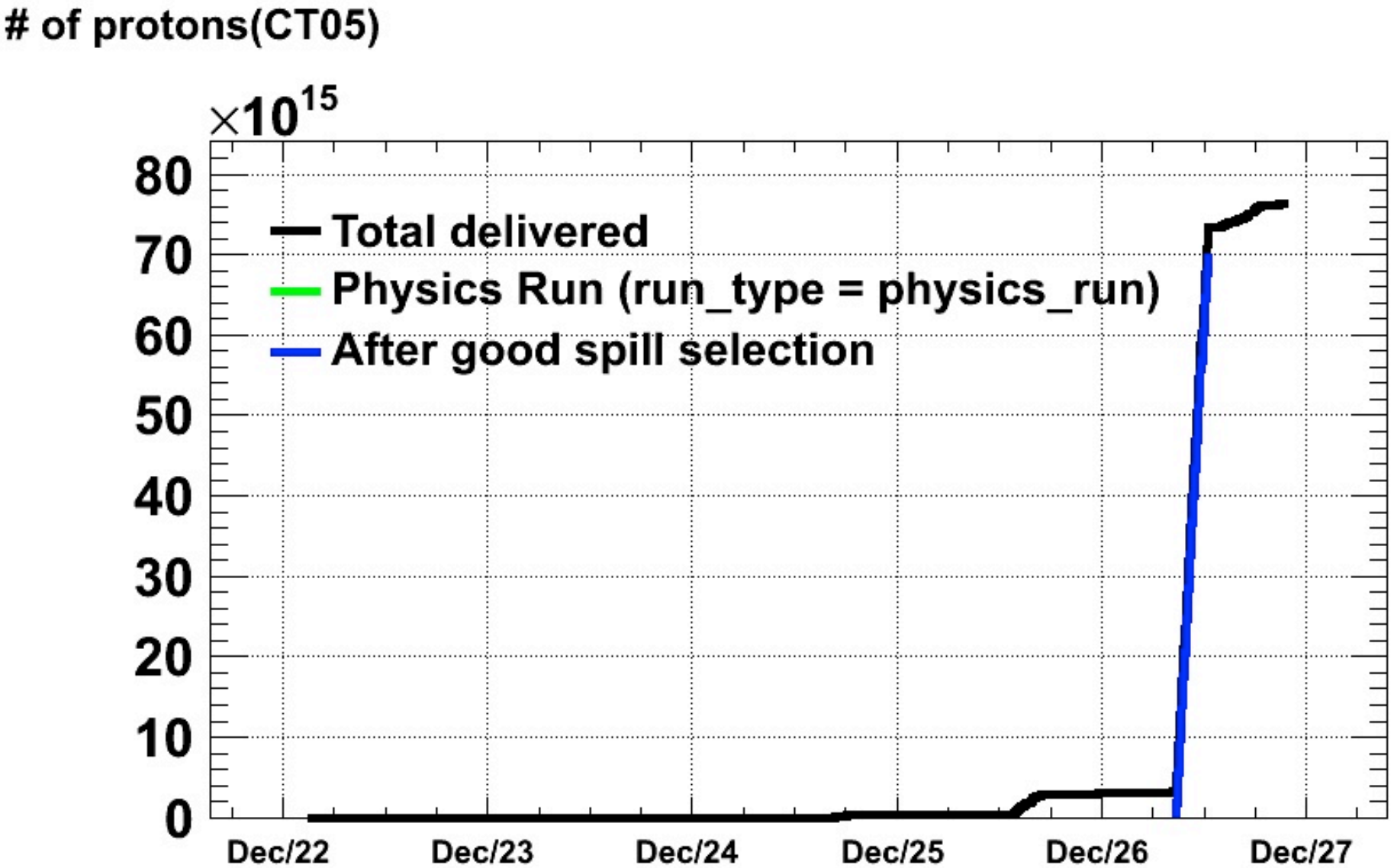
MUMON Si/CT5 Q cut = 8.57 ± 0.42

	# of spills	Ratio
All spills	3740	1
Beam trigger	3730	0.997
Good GPS	3730	0.997
ppp(CT5)>1e11	3721	0.995
Normal beam	3721	0.995
MUMON cut	3721	0.995

<u># of delivered protons(CT5) = 7.05e16</u>

For Run40, calculate nominal MUMON Si/CT4 again because beam condition is different

POT history in 2011.12



New definition of good spill flags

- MR Run 29~38
  - Good spill -> flag = 1
  - Not good spill -> flag = 0
- MR Run 39~
  - Good spill -> flag = (Setting horn current)
    - If no horn operation, flag = 100
  - Not good spill -> flag = 0

Reminder: release process

- Quick beam summary :
  - Process done every ~2 days (by manual)
  - Check minimum quality check (process done correctly?, file broken?, latest calib const?, etc) → Release for ND&SK
    - If no problem, can release every 2~3 day (When need to update, release again).
- Beam summary with good spill flag:
  - Apply good spill selection for quick beam summary in physics run
  - Check beam quality in weekly beam group meeting
    - After beam group approves at this meeting, can release beam summary data for ND&SK