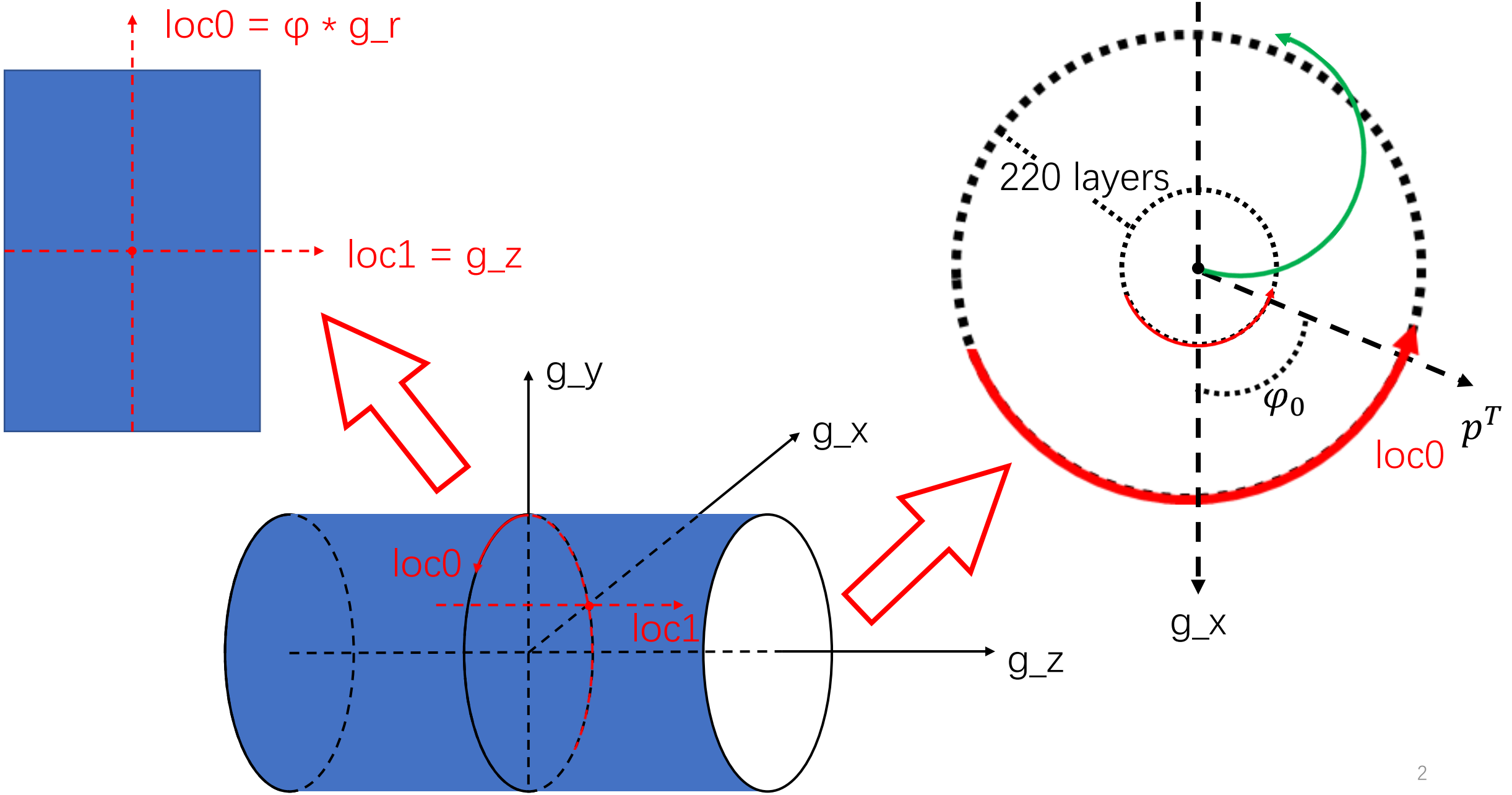
Weekly Report

Yebo

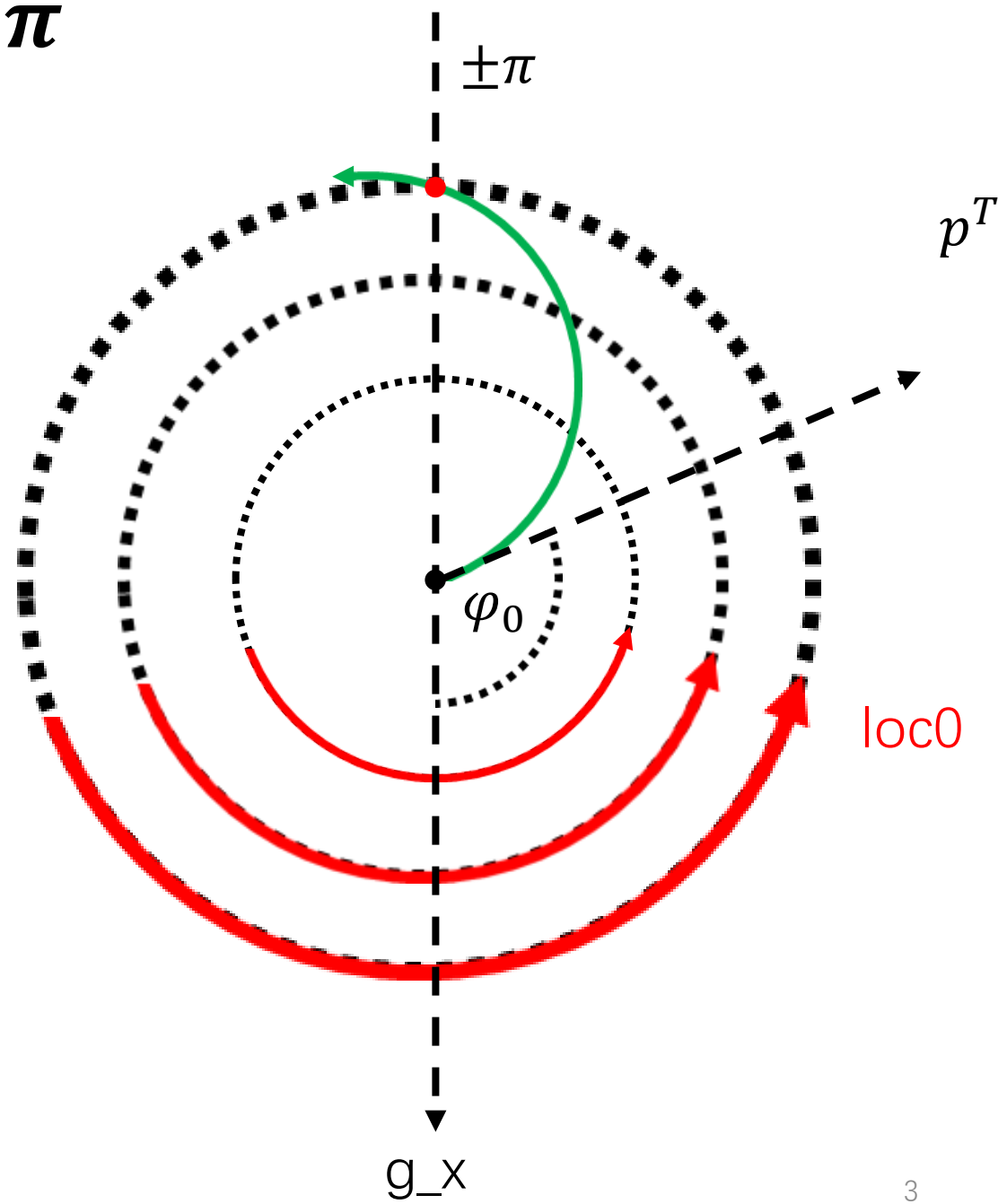
2020.08.25

Coordinates of TPC



Problem of hits with TPC near $\pm\boldsymbol{\pi}$

- loc0 = φ * g_r
- φ is periodic
  - $\varphi \in [-\pi + 2k\pi, \pi + 2k\pi)$
- Hits with TPC would be near $\pm\boldsymbol{\pi}$
- If there is no protection against periodicity, errors would occur during
  - Propagation
  - Smearing
  - Prediction
  - …



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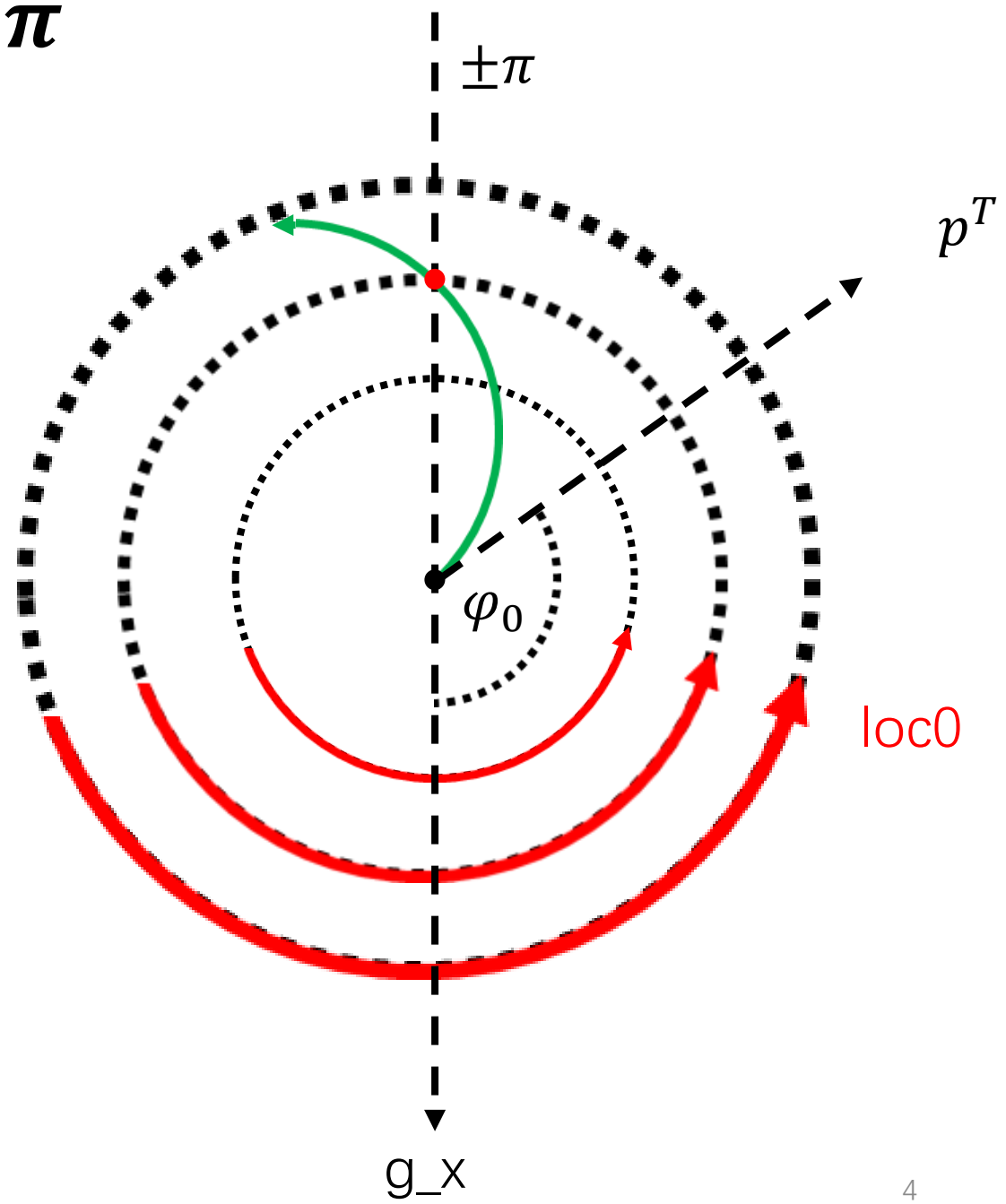

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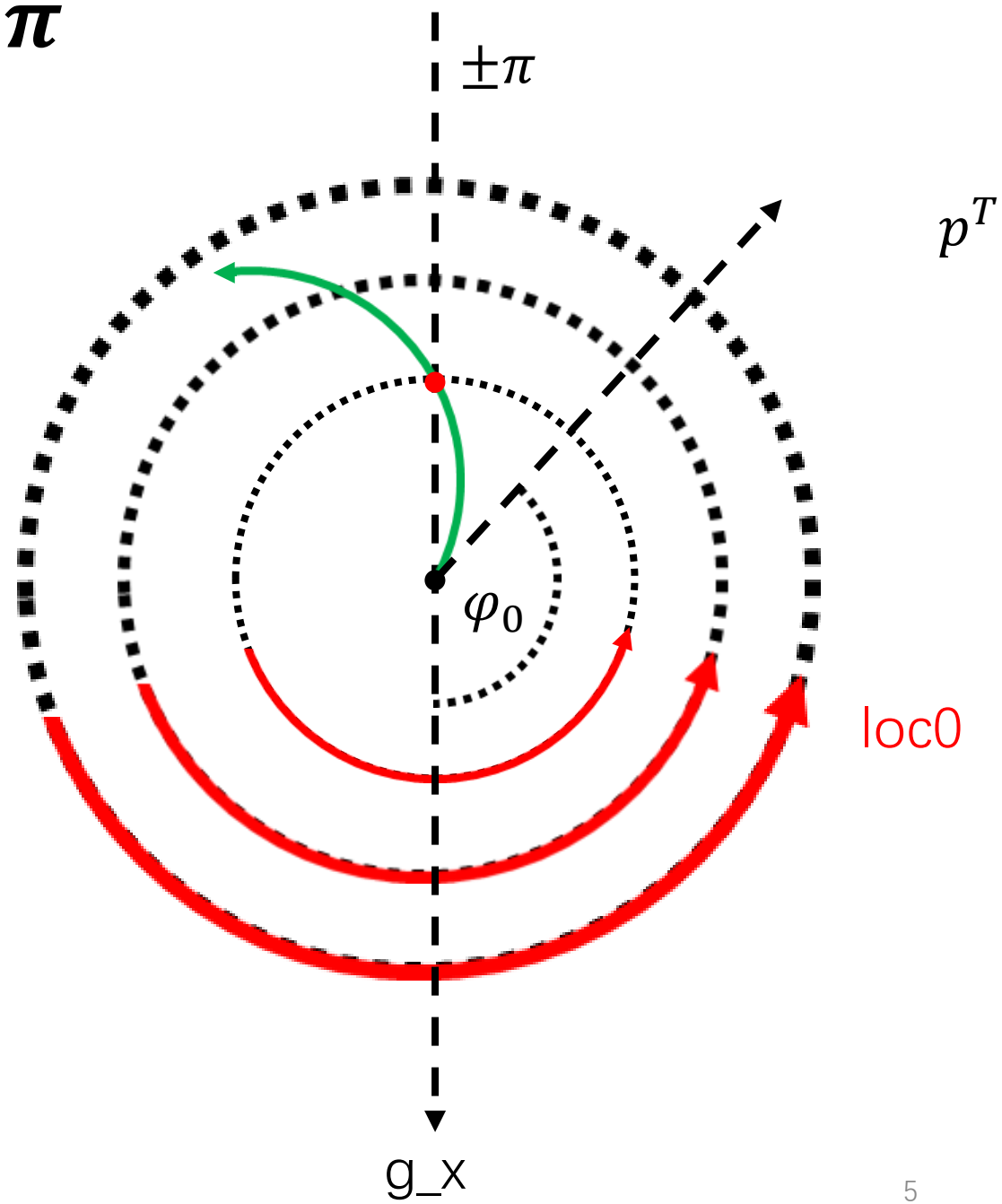
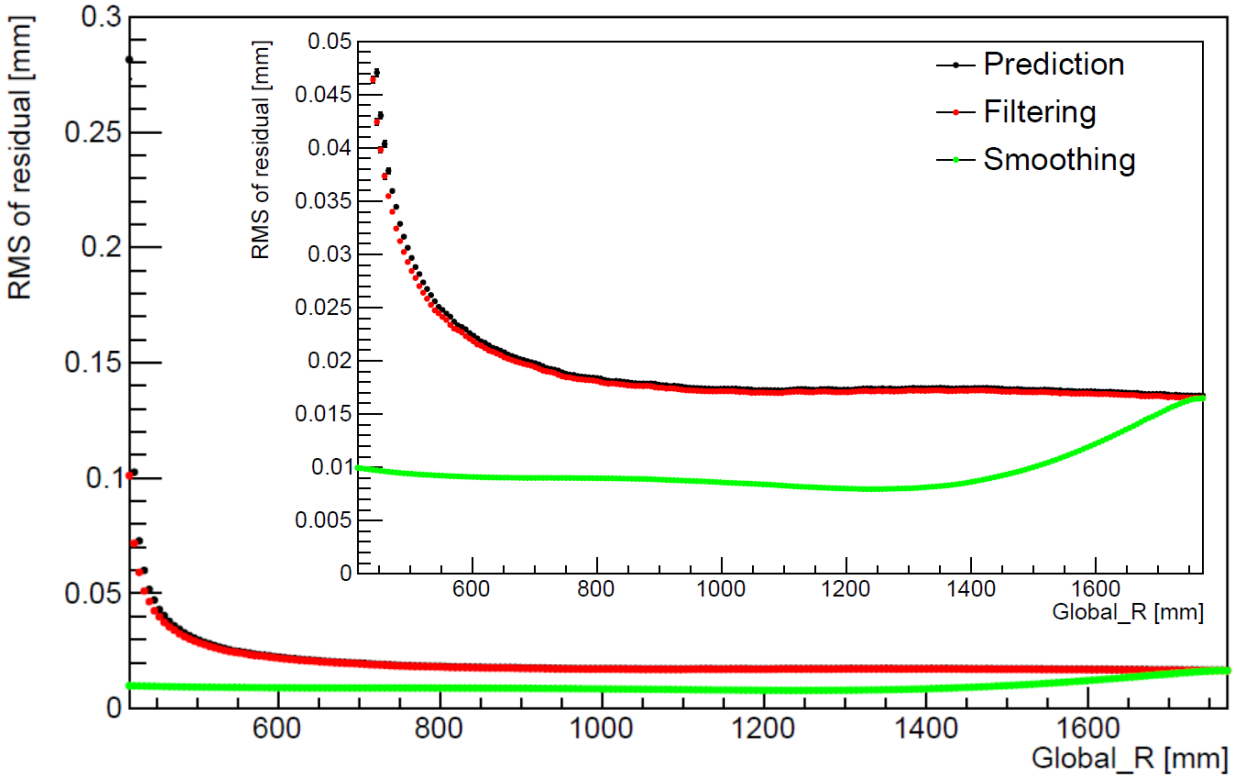


Problem of hits with TPC near $\pm\pi$

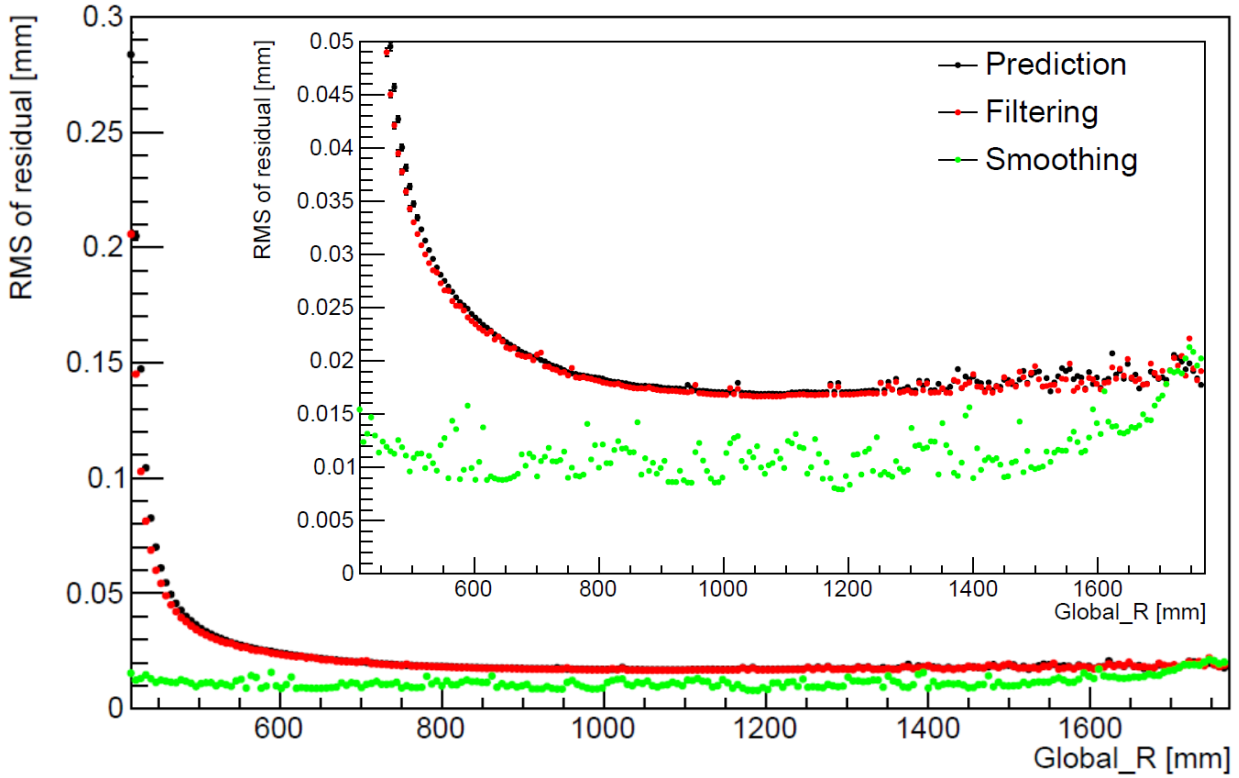
- TPC only
- Particle gun: 10000 μ^- from (0, 0, 0)
- Magnetic field: (0, 0, 3T)
- p^T: 100GeV
- θ: 85°
- φ_0: uniform distribution in
  - **[-3.14, 3.13] (no track has hits with TPC near $\pm\pi$)**
  - **[3.13, 3.14] (tracks would have hits with TPC near $\pm\pi$)**
- No material
- Backward filtering

Problem of hits with TPC near $\pm\pi$

- RMS of residuals (prt/flt/smt - truth) of loc0



$\varphi_0 \in [-3.14, 3.13]$
Particle gun: 10000 μ^-
Total entries stored in tracks.root: 10000
Entries with 220 measurements: 10000



$\varphi_0 \in [3.13, 3.14]$
Particle gun: 10000 μ^-
Total entries stored in tracks.root: 8603
Entries with 220 measurements: 7415

Problem of hits with TPC near $\pm\pi$

- This problem does exist, but we have not found out where the error occurred