Optics Status Update

Chao Gu

Optics Status Update

- RHRS Optics summary
  - No target field: 1 settings
  - With target field: 4 settings
    - 2.254GeV, 2.5T, 484816
    - 2.254GeV, 2.5T, 403216
    - 1.706GeV, 2.5T, 400016
    - 1.158GeV, 2.5T, 400016
- Longitudinal and 5.0T transverse settings: only took 1 or 2 runs
  - Use the 1.706GeV matrix

Optics Status Update

- The performance summary of the optics without target field: the table shows a summary of the RMS values of each kinematic variables after calibration

	LHRS	RHRS
δ [dp]	1.5×10^{-4}	2.4×10^{-4}
θ [out-of-plane angle]	1.59 mrad	1.57 mrad
y	3.3 mm	2.9 mm
φ [in-plane angle]	0.99 mrad	0.82 mrad

Optics Status Update

- The performance summary of RHRS: the table shows a summary of the RMS values of each kinematic variables after calibration

E (GeV)	Septum	δ [dp]	θ [out-of-plane angle]	φ [in-plane angle]
2.253	484816	1.8×10^{-4}	1.5 mrad	0.7 mrad
2.253	483216	2.3×10^{-4}	1.6 mrad	0.9 mrad
1.706	400016	2.1×10^{-4}	1.6 mrad	0.8 mrad
1.158	400016	2.3×10^{-4}	1.8 mrad	0.8 mrad

- During the 2nd iteration, the RMS value when fitting y_{tg} is at around 3 to 4 mm level. It is a rough estimation since the fitting is not as good as the other variables

Calibration

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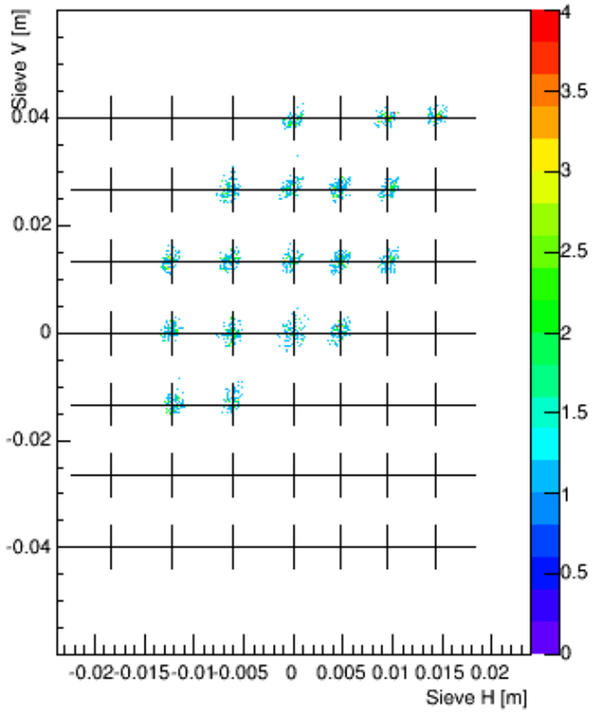

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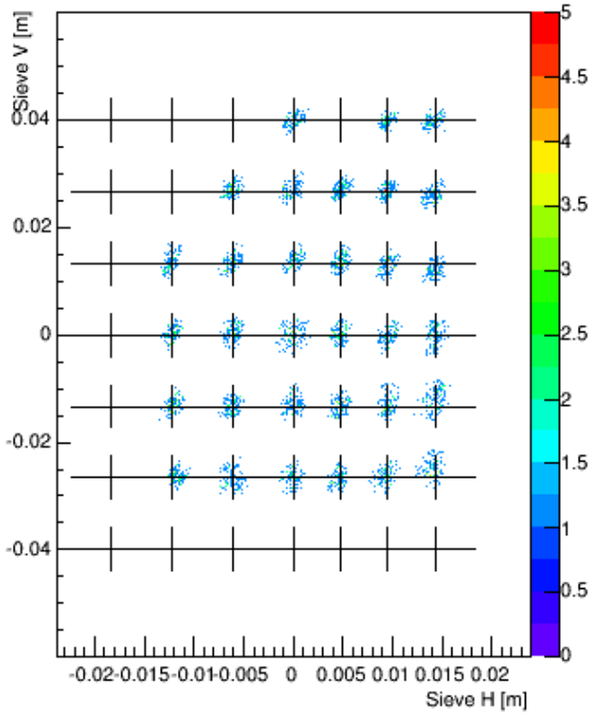

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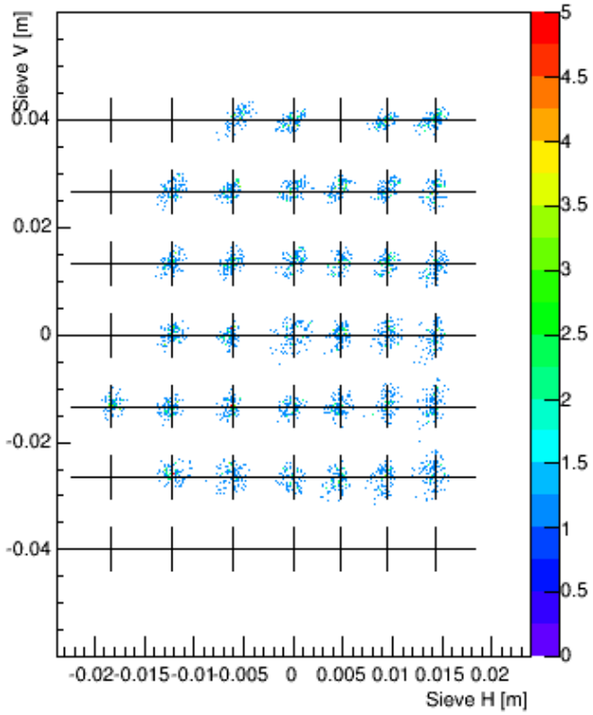

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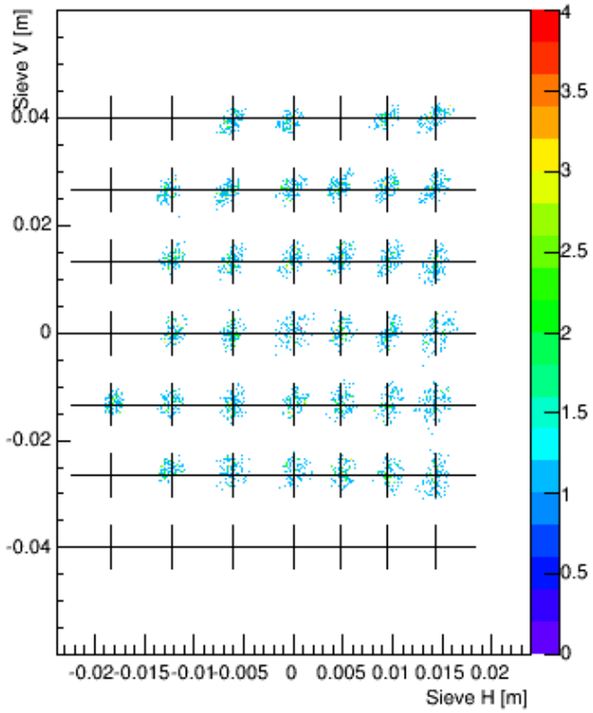

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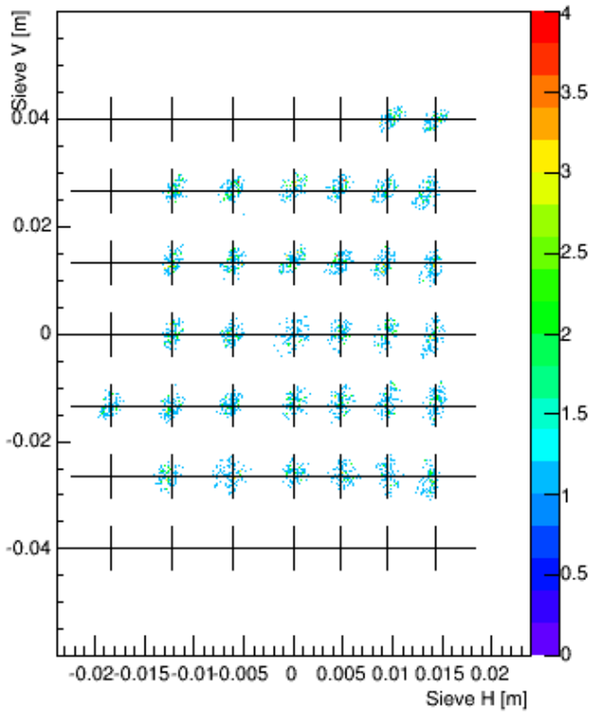

RHRS (1.158GeV, 2.5T)

Calibration

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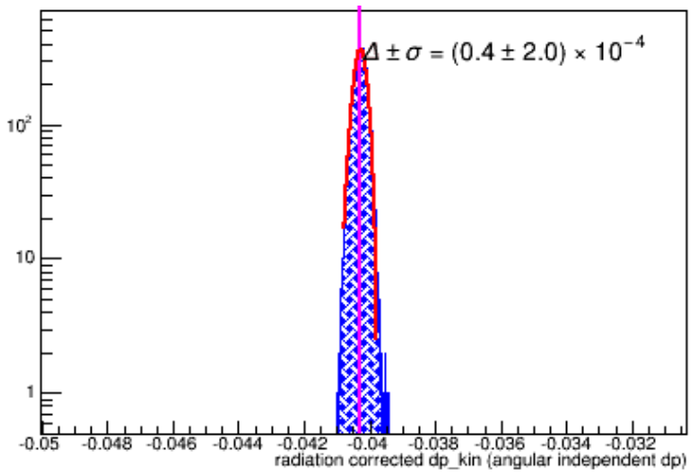

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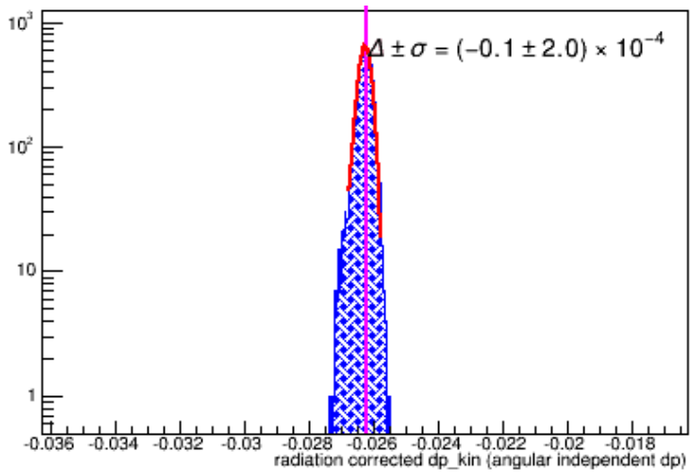

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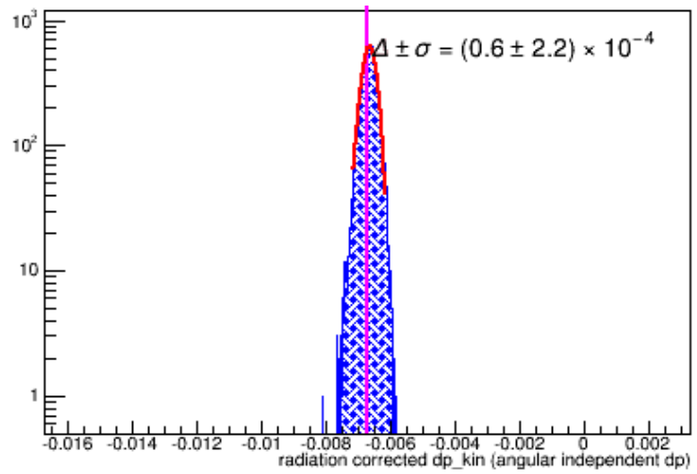

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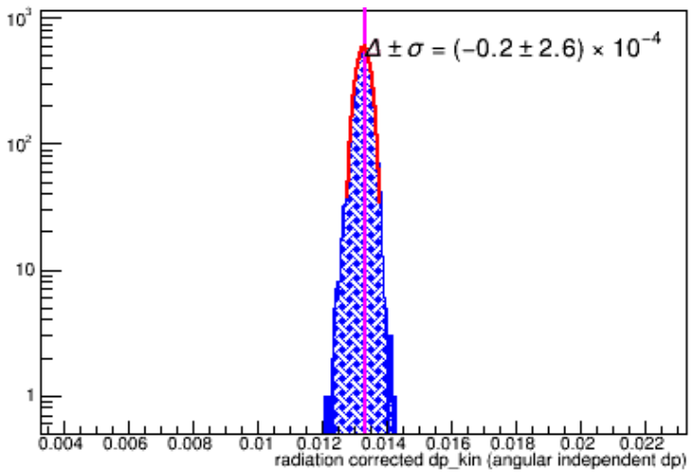

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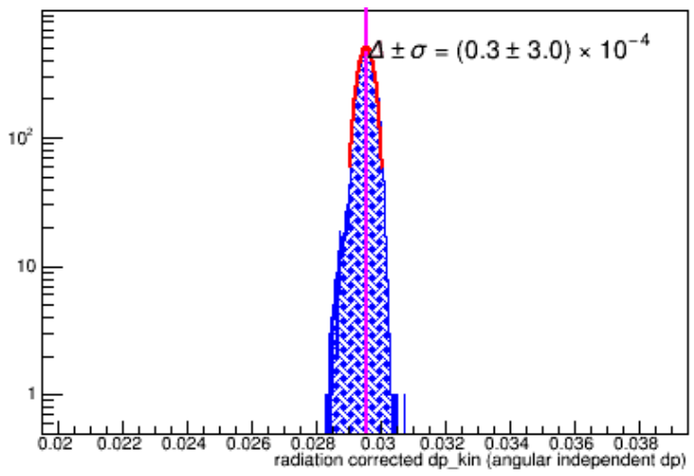

RHRS (1.158GeV, 2.5T)

Calibration

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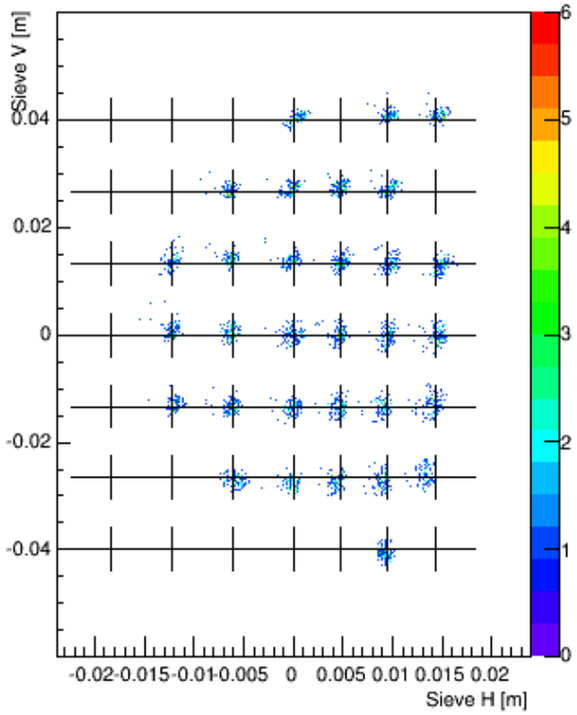

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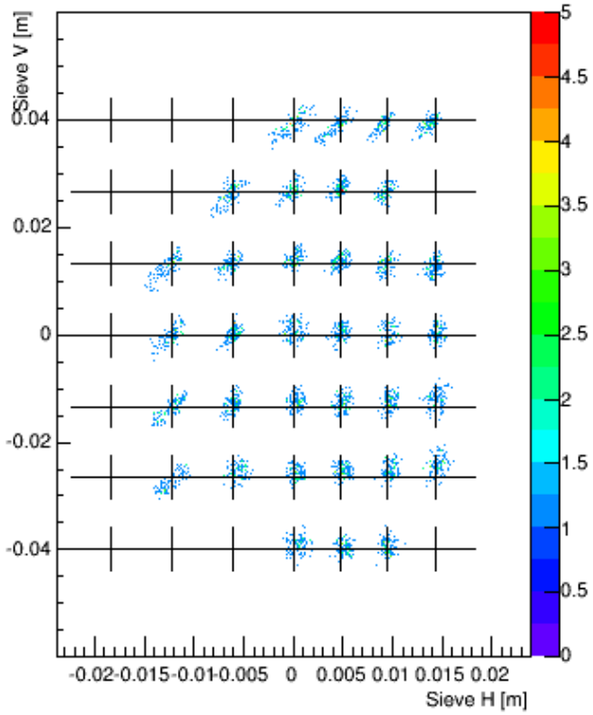

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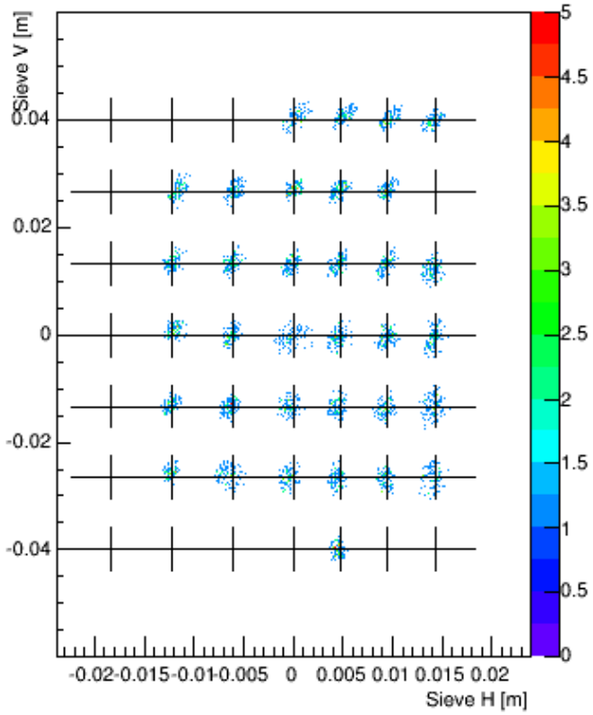

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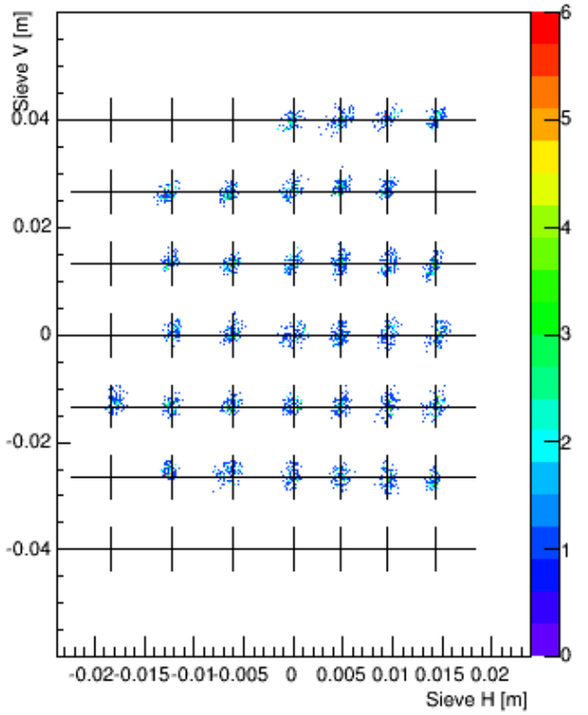

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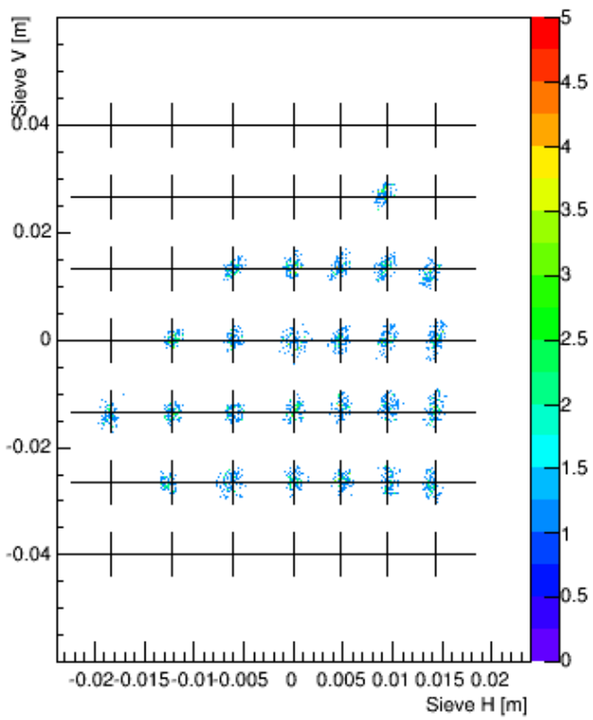

RHRS (1.706GeV, 2.5T)

Calibration

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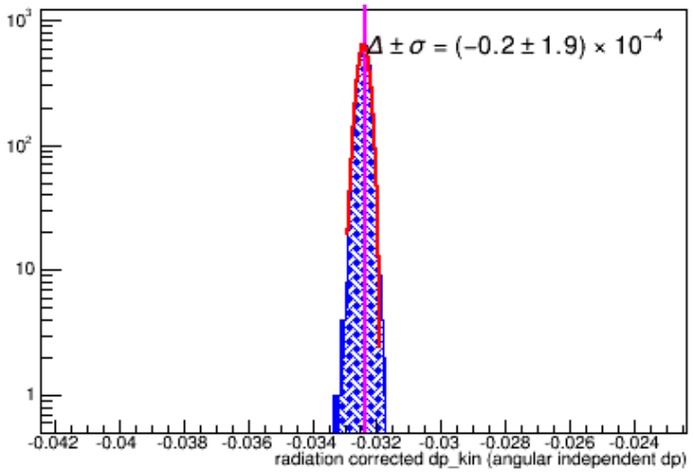

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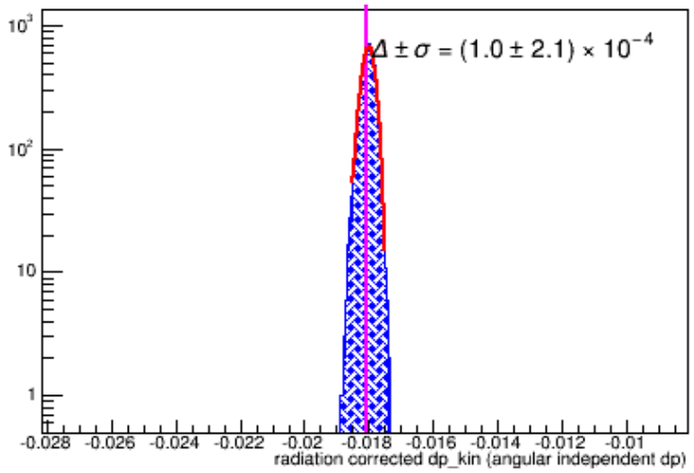

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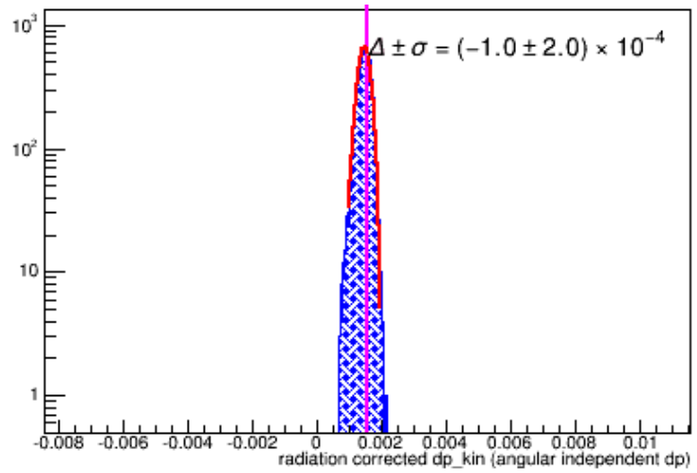

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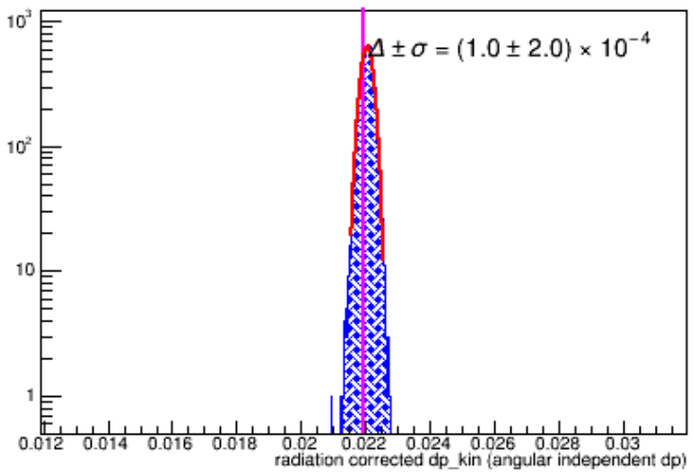

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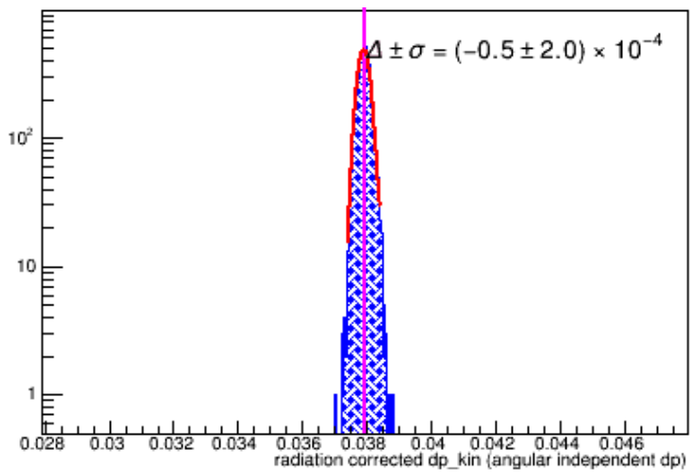

RHRS (1.158GeV, 2.5T)

TODO

- Test the 2.5T transverse reconstruction matrix on longitudinal and 5.0T transverse optics runs to see if it works
- Optics tech note

Simulation Package

- Simulation Package has been updated during the optics calibration to cover RHRS and some upstream geometries
    - Targets are no longer hard coded in the package, it is much easier to change configuration
- The most recent version are published via github: https://github.com/asymmetry/g2psim