

# DC Calibration and Performances

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(For the DC Calibration Team)

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## Outline

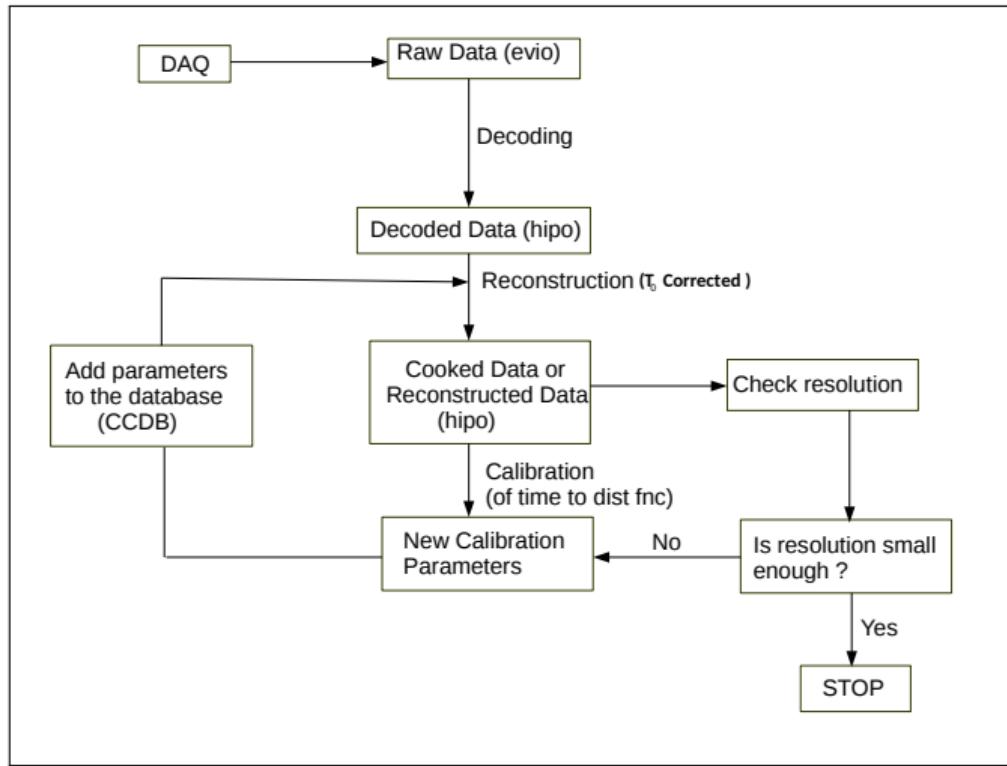
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- ① DC Calibration Team
- ② Update to the DC Calibration Suite
- ③ Update to  $T_0$  and time-to-distance calibration
- ④ Performances based on recent calibrations
- ⑤ Source code / Documentation

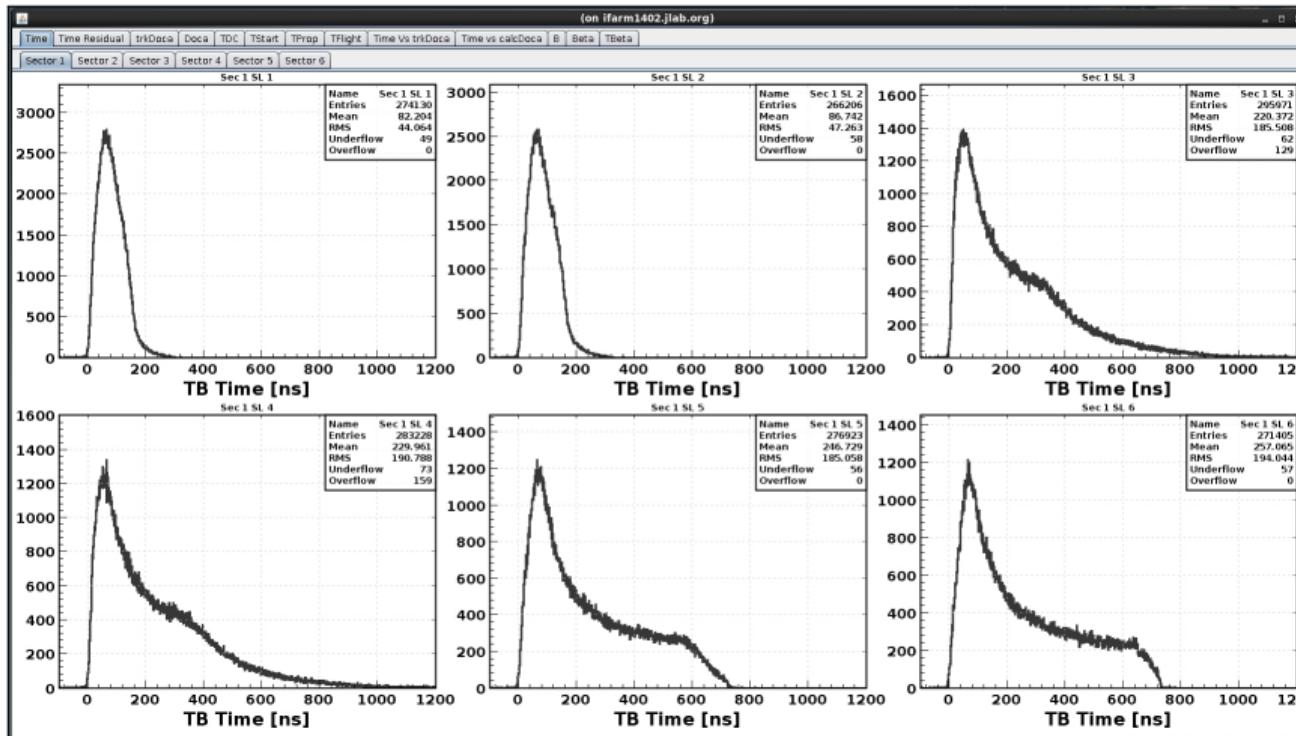
## DC Calibration Team

- **Group Leader:** Mac Mestayer
- **Calibration Suite / Training / Debugging:** Latif Kabir
- **RG-A Calibrators:** Dilini Bulumulla, Shirsendu Nanda
- **Reconstruction:** Veronique Ziegler
- **CalCom / Software Coordinator:** Daniel Carman / Raffaella De Vita

# DC Calibration

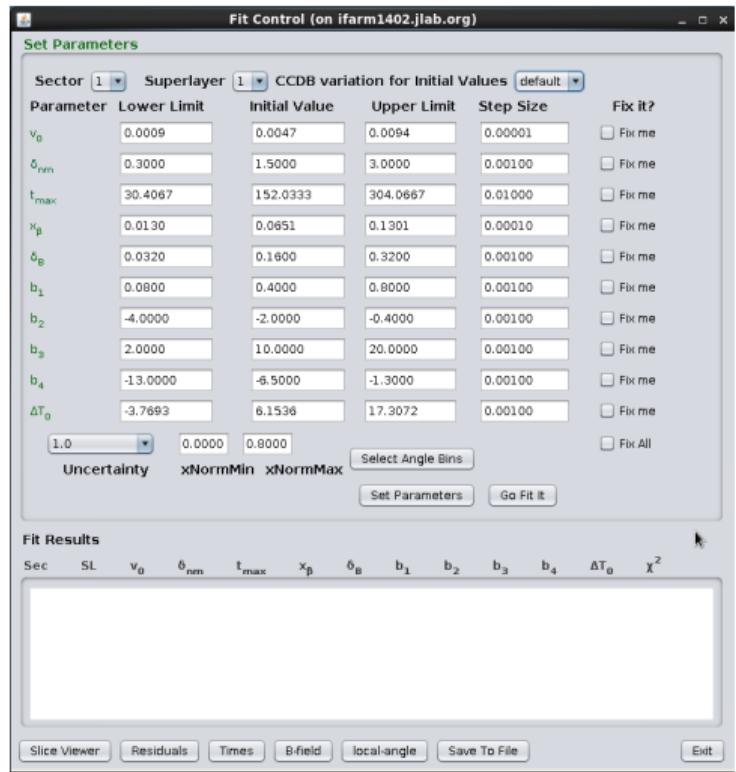
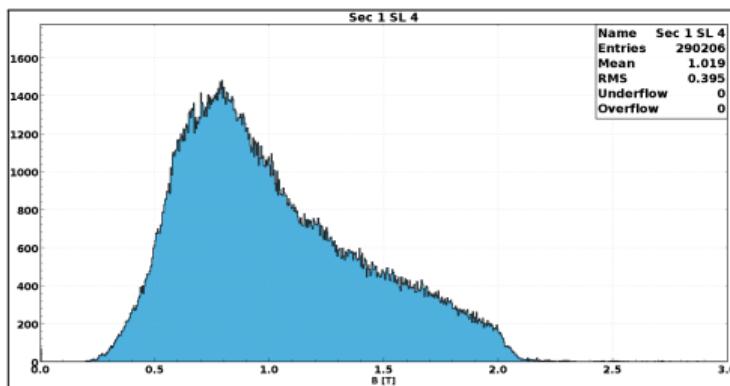


# Calibration Suite Update

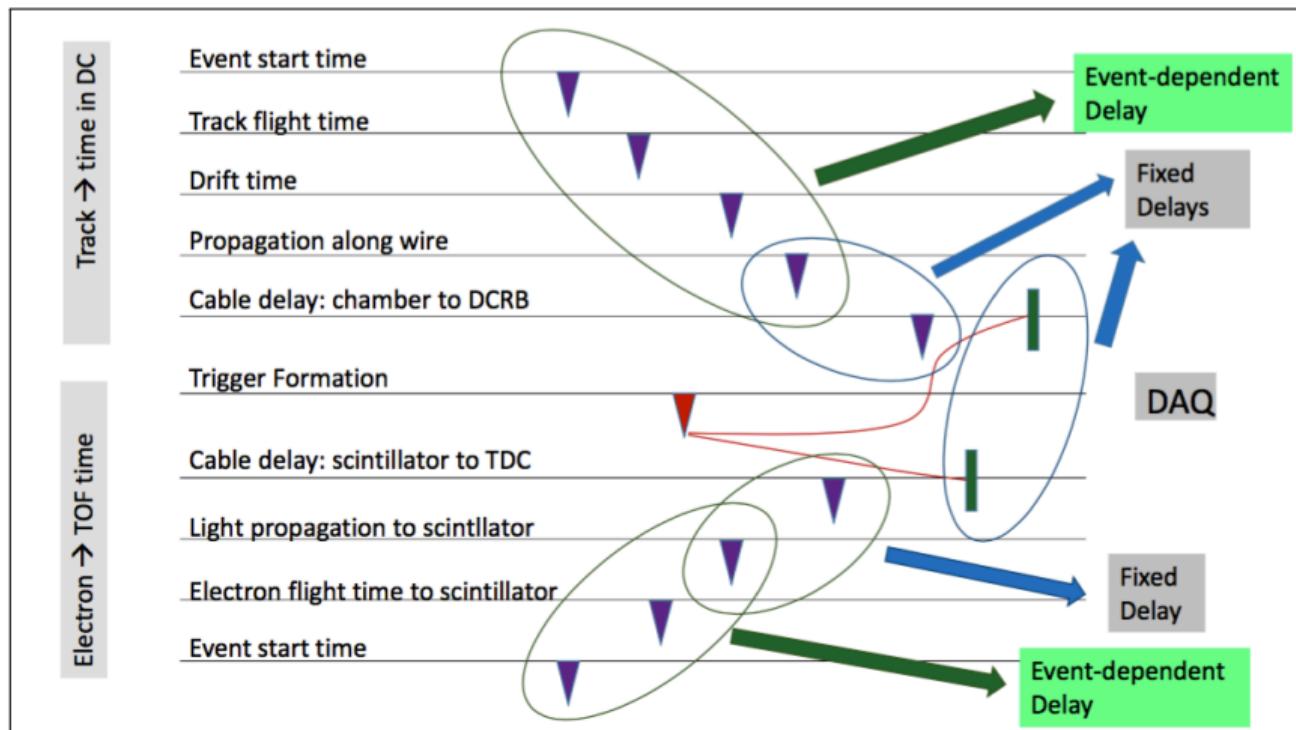


# Calibration Suite Update

- Save fit parameters directly to file.
- Printed  $\chi^2$  to guide the calibration.
- Finer B-field binning.

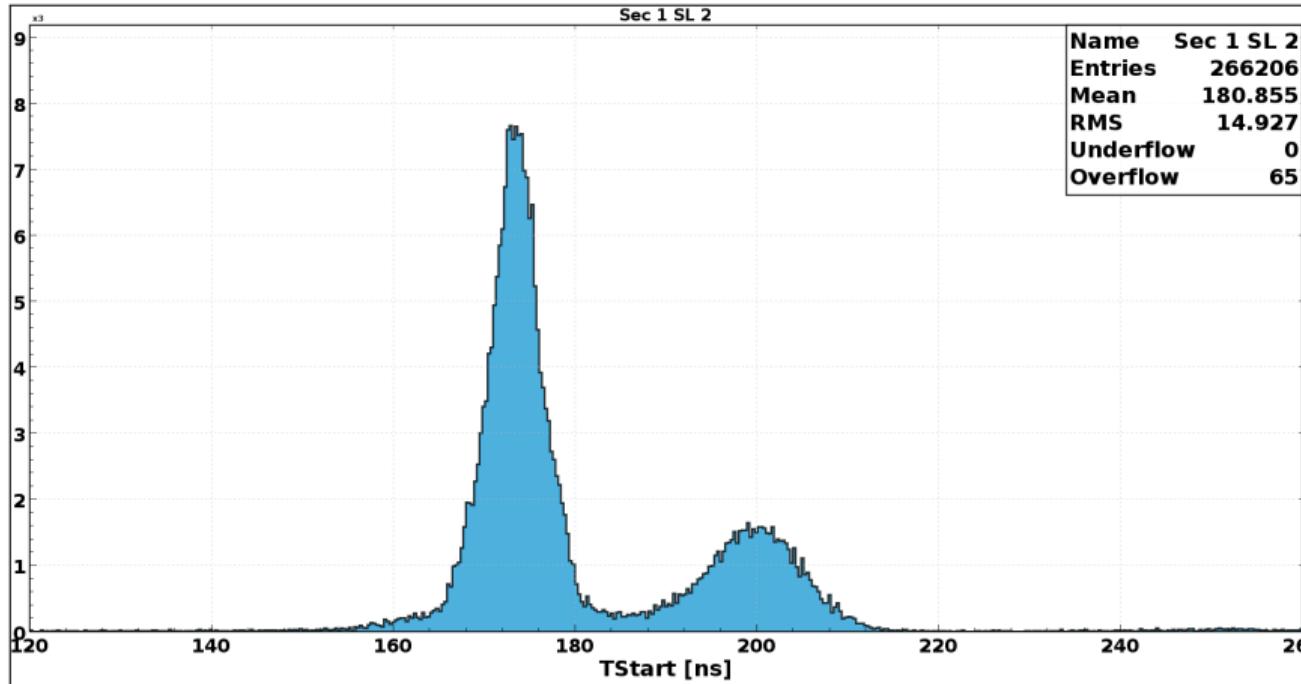


# Update to $T_0$ and Time-to-Distance Calibration

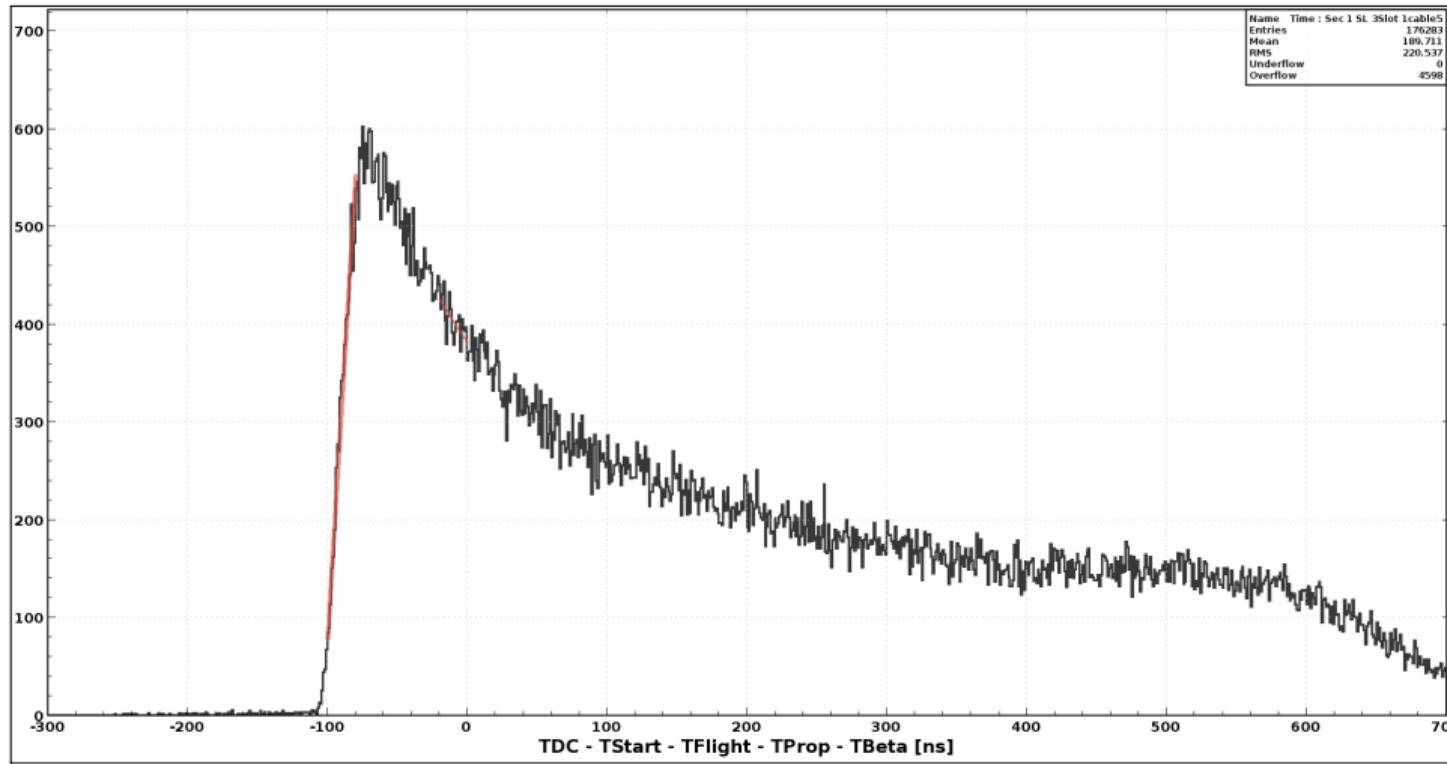


\* Taken from Veronique's slide

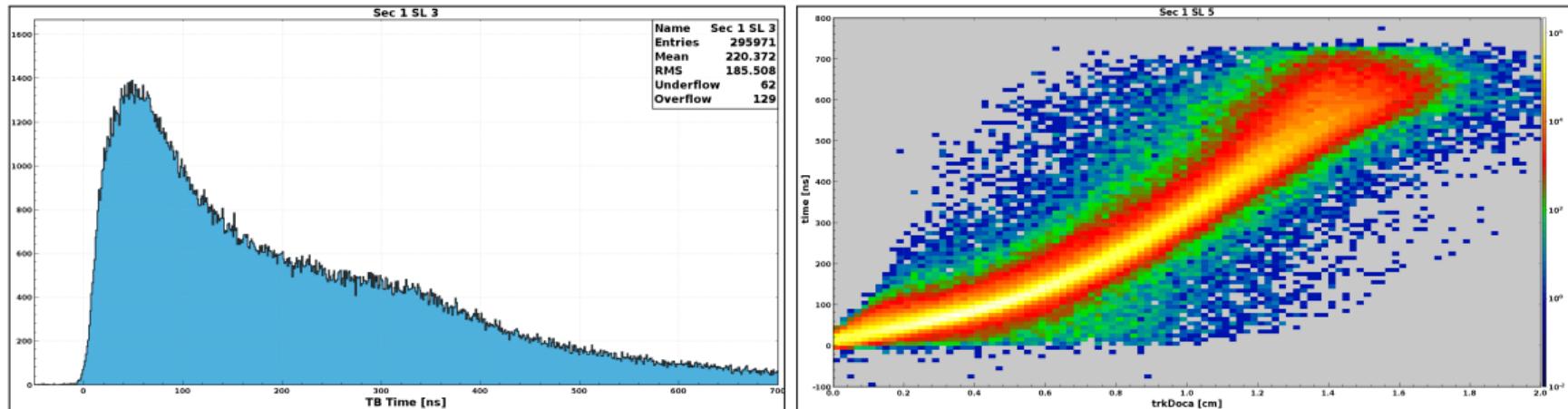
# $T_0$ Correction With Event-by-Event Start Time



# $T_0$ Correction With Event-by-Event Start Time



## Distributions With All Corrections Applied

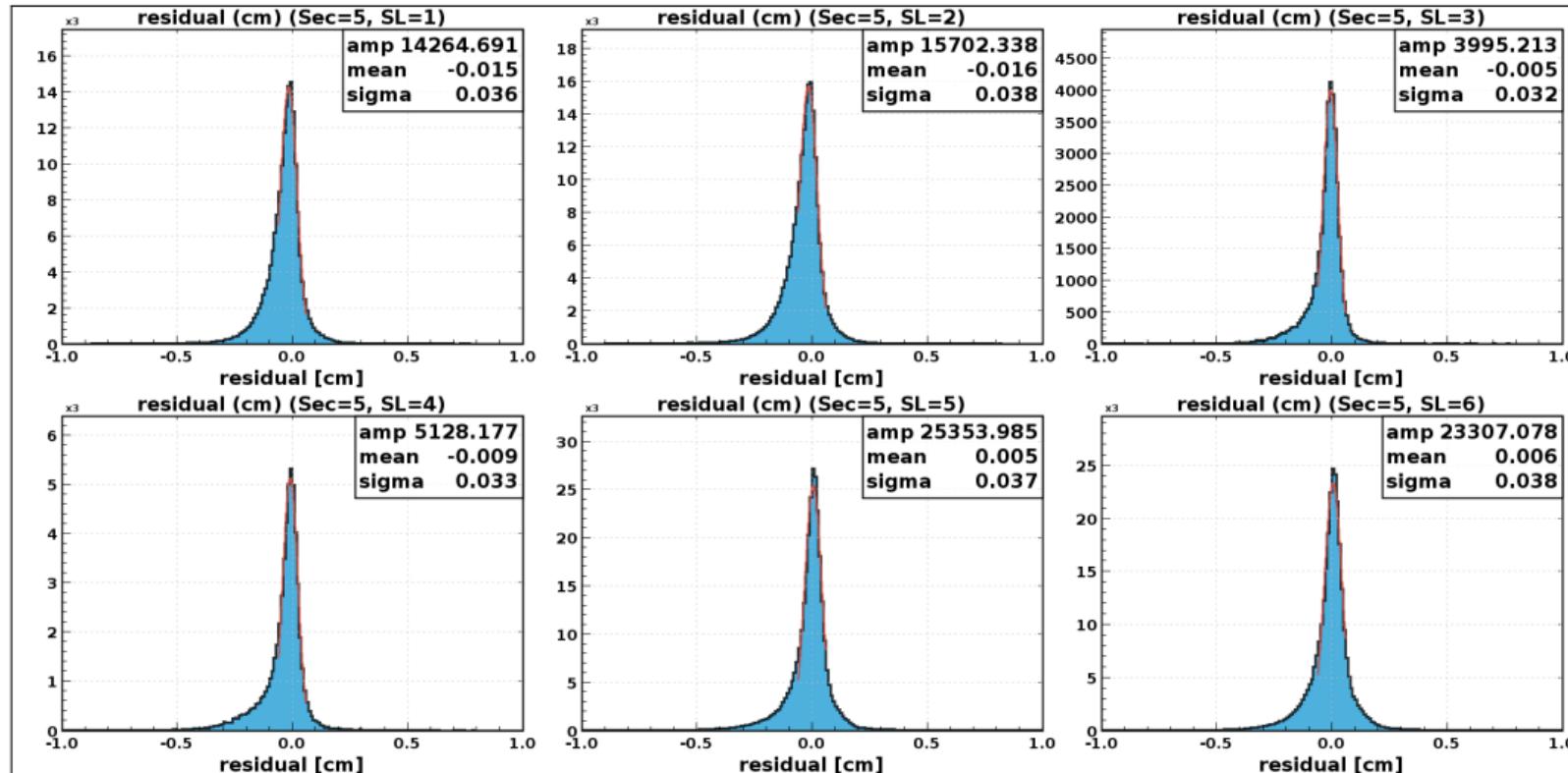


## Results From All Calibrated Runs

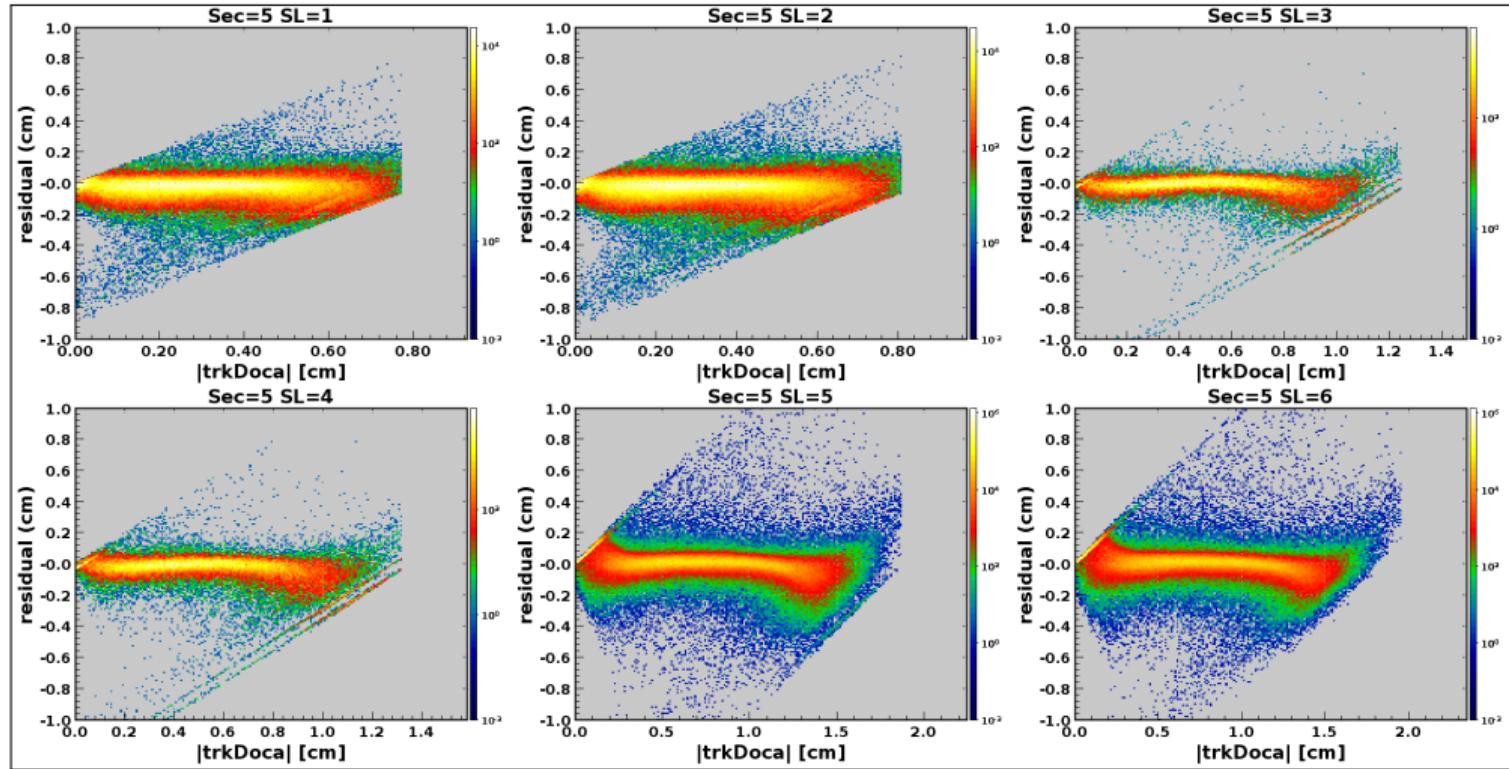
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Run#	$E_b$ (GeV)	Current (nA)	Target	Torus/Solenoid (%)	Resolution ( $\mu\text{m}$ )
2052	10.6	5	LH2	-85 / -100	340 - 500
2091	10.6	10	LH2	-85 / -100	350 - 450
3050	6.4	15	LH2	-100 / -100	360 - 470
3105	6.4	10	LH2	75 / -100	330 - 480
3222	10.6	25	LH2	100 / -100	370 - 490
4013	10.6	50	LH2	-100 / -100	310 - 460
4150	10.6	2	LH2	-100 / -100	300 - 420
2391	2.2	5	LH2	100 / -100	In progress

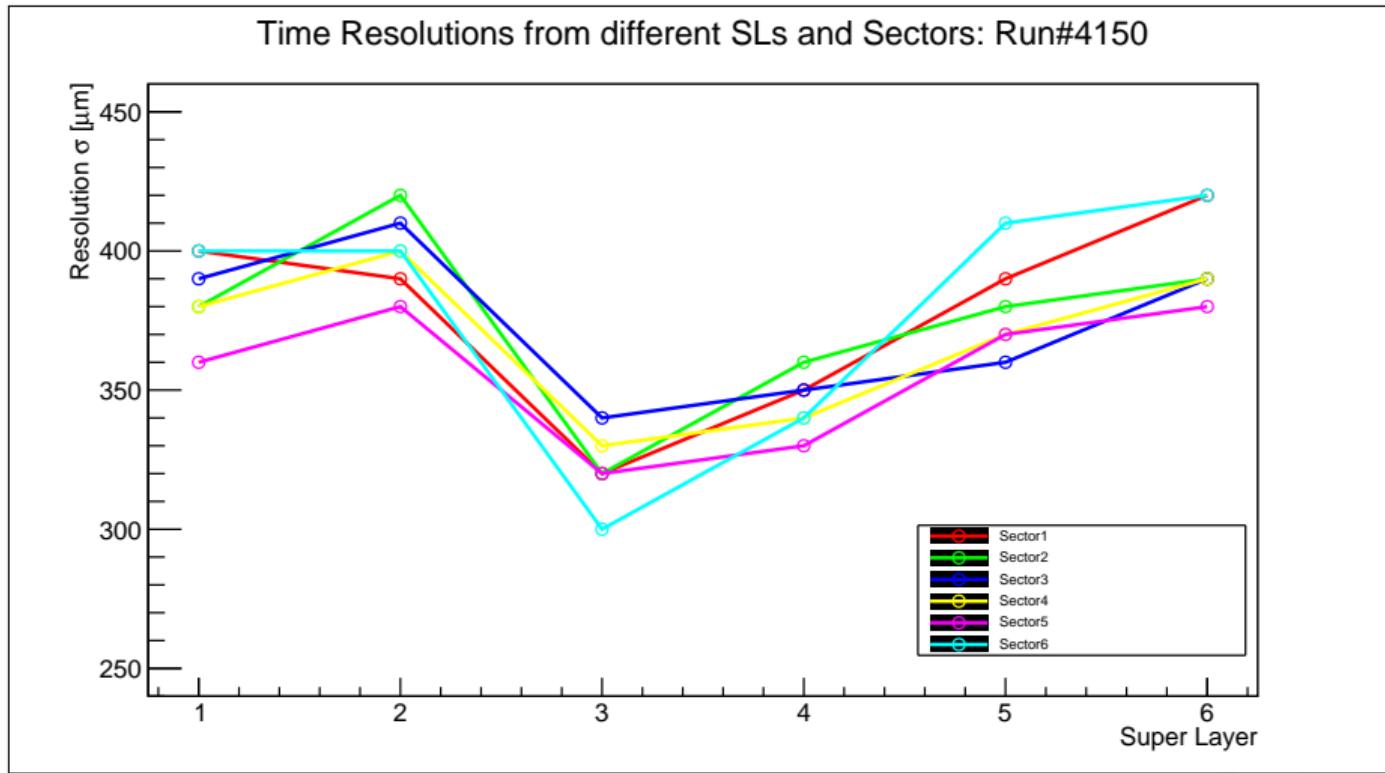
# Resolutions From Recent Calibration (run#4150)



# Recent Calibration Resolutions(run#4150)



# Resolutions From Recent Calibration (run#4150)



# Git Repository & Documentation

[JeffersonLab / clas12dc](#)

Code Issues Pull requests Projects Insights

clas12 DC calibration code

28 commits 1 branch 3 releases 1 contributor

Branch: master New pull request

Find file Clone or download

Latest commit 7f8d5bb 3 minutes ago

lalitkabir Updated Readme

Calibration Updated Readme 3 minutes ago

DataExplorer Reorganized the repository. It now contains all DC related packages u... 20 hours ago

Monitoring Reorganized the repository. It now contains all DC related packages u... 20 hours ago

.gitignore Save fit parameters in run number appended file 2 days ago

README.md Updated Readme 3 minutes ago

clas12dc Added farm cooking status checking 17 hours ago

README.md

## CLAS12 DC Software

- CLAS12 DC Calibration: DC Calibration suite for CLAS12.
- DC Monitoring: DC Monitoring GUI.
- CLAS12 Data Explorer: Data Explorer for CLAS12 data. It allows plotting any CLAS12 detector sub-system with cuts with few clicks.

Please read the README file inside each package for detailed instructions for that specific package.

## Calibration of CLAS12 Drift Chambers

Krishna Adhikari, Mac Mestayer, Latif Kabir

### Abstract

In this document the process of DC calibration, mainly the calibration of the time-to-distance function is described. Additionally, the GUI for the calibration suite which is written in Java using CLAS12 common tools is described.

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## Summary

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- The calibration suite is fully functional.
- The  $T_0$  calibration currently includes all possible corrections.
- Initially assigned RG-A runs for DNP have been calibrated.
- Efforts to make the calibration process more user-friendly are ongoing.
- Initial documentation and tutorials are in place.