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CORPUSCULAR

PhD30: Measurements prep ATF May26

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Measurements
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LabRF meeting, 17/04/26

Introduction

- I. Acquisition and processing scripts
 - A) Acquisition identification
 - B) Digital signal processing
 - C) Calibration
 - D) Resolution results

II. Preparation

Conclusion

I. Acquisition and processing scripts

A) Acquisition identification

shift number (1,2,3,4,5,6)

axis: X or Y

S3_res_Y_001

número de la medida

Identificación de la adquisición:

res: resolution

cal: calibration

Datos adicionales que se agregan al excel al momento de tomar las medidas:

fecha y hora de adquisición

intensidad y valores de los kickers

datos del osciloscopio

waveforms

calibración para esa medida

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	ACQUISITION										OSCILLOSCOPE		
2	run_id	comment	shift	axis	time_stamp	N_waveforms	I_bunch	I_ZH2P	I_ZV2P	cal_id	sampling_rate	time_window	points_wave
3							(nC/bunch)	(A)	(A)		(GS/s)	(ns)	
4	S3_res_Y_001	2DC	3	Y	16/12/2025 03:07	1000	0.544	-0.05	1.3	S3_cal_Y_001	2	50	100
5	S3_res_Y_002	2DC	3	Y	16/12/2025 03:53	1000	0.656	-0.05	1.3	S3_cal_Y_001	2	50	100
6	S3_res_Y_003	2DC	3	Y	16/12/2025 04:22	1000	0.88	-0.05	1.3	S3_cal_Y_001	2	50	100

I. Acquisition and processing scripts

A) Acquisition identification

shift number (1,2,3,4,5,6)

axis: X or Y

Valor kicker en sub-adquisición

S3_cal_Y_001_Kv=1.00

Identificación de la adquisición:

res: resolution
cal: calibration

número de la medida

Datos adicionales que se agregan al excel al momento de tomar las medidas:

fecha y hora de adquisición

intensidad y valores de los kickers

datos del osciloscopio

waveforms

	A	B	C	D	E	F	G	H	I	J	K	L
1	ACQUISITION					OSCILLOSCOPE						
2	run_id	comment	shift	axis	time_stamp	N_waveforms	I_bunch	I_ZH2P	I_ZV2P	sampling_rat	time_windo	points_wav
3							(nC/bunch)	(A)	(A)	(GS/s)	(ns)	
4	S3_cal_Y_001	2DC	3	Y	16/12/2025 03:07	50	0.656	-0.05		2	50	100
5	S3_cal_Y_001_K_v=1.00								1			
6	S3_cal_Y_001_K_v=2.20								2.2			
7	S3_cal_Y_001_K_v=2.80								2.8			
8	S3_cal_Y_001_K_v=0.00								0			

I. Acquisition and processing scripts

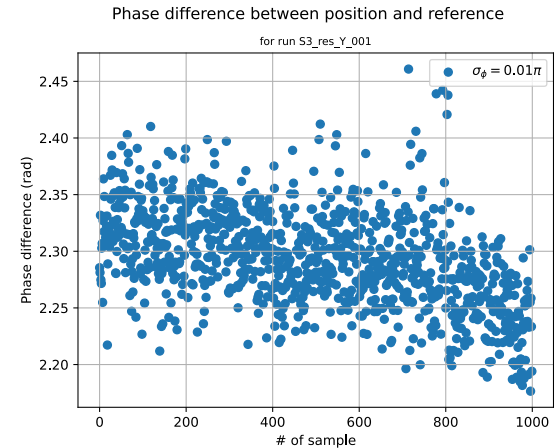
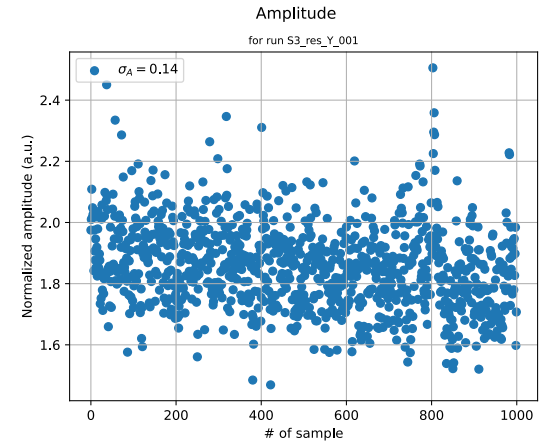
B) Digital signal processing

	A	N	O	P	Q	R
1	DDC PARAMETERS					
2	run_id	f_IF_pos	f_IF_ref	sigma_DDC	sigma_A	sigma_phi
3		(Hz)	(Hz)	(Hz)	(a.u.)	(rad. π)
4	S3_res_Y_001	6.00E+07	4.00E+07	3.00E+07	0.14	0.01
5	S3_res_Y_002	6.00E+07	4.00E+07	3.00E+07	1.38	0.03
6	S3_res_Y_003	6.00E+07	4.00E+07	3.00E+07	0.07	0.97
7						

frecuencia de oscilación de señales de posición y referencia en IF

stdv de Amplitud y fase determinada para el set de medidas

σ de filtro gaussiano aplicado en DDC



I. Acquisition and processing scripts

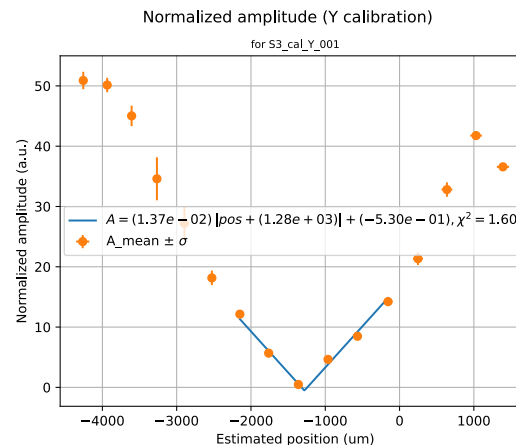
C) Calibration

To insert when doing the calibration:

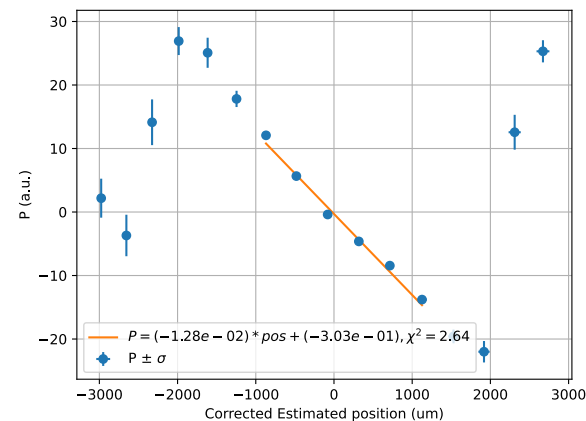
	A	R	S
1		RANGE	
2	run_id	d_bound	u_bound
3		(um)	(um)
4	S3_cal_Y_001	-2500	0
5	S3_cal_Y_001_K_v=1.00		
6	S3_cal_Y_001_K_v=2.20		
7	S3_cal_Y_001_K_v=2.80		

Given calibration results:

	A	T	U	V	W	X	Y	Z
1		RESULTS						
2	run_id	dyn_range	static_offset	slope	slope_error	intercept	intercept_er	chi2
3		(um)	(um)	(1/um)	(1/um)			
4	S3_cal_Y_001	1994.674	1280.614	-0.013	0.001	-0.303	0.42	2.635
5	S3_cal_Y_001_K_v=1.00							
6	S3_cal_Y_001_K_v=2.20							
7	S3_cal_Y_001_K_v=2.80							

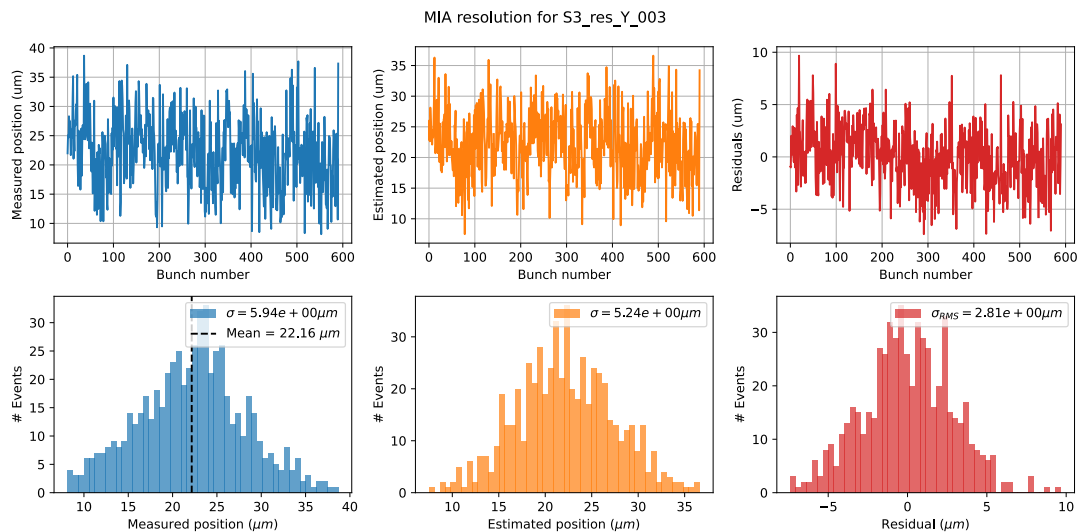


Y calibration for S3_cal_Y_001



I. Acquisition and processing scripts

D) Resolution results



	A	S	T	U	V	W	X	Y
1		SYNC	RESULTS					
2	run_id	window_sync	N_bunches	num_strips	mean_pos	std_dev	resolution	res_err
3		(s)			(μm)	(μm)	(μm)	(μm)
4	S3_res_Y_001	0.21	582	10	99.74	10.393	8.844	
5	S3_res_Y_002	0.21	500	10	82.068	6.403	4.523	
6	S3_res_Y_003	0.21	591	10	22.157	5.937	2.813	
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Thank you for your attention

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Back-up slides