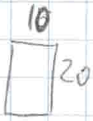
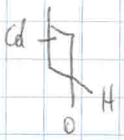
24.10.23 CRG-3061 energy weak values

skew-symm. IEM, 30°, USANS-mono, Quarzglas-Pl. St. 2,2mm



s	HFWHM	H in 2s
2,40	0,00032	4862
2,36	31	4930
2,32	35	4690
2,28	43	3739
2,40	353	4746
2,44	426	3694
2,36	37	4955
	0,00035	5036



aux pos_240d1731.dat

racking_240d1738.dat — pillar Aux

linear Blue = 97

racking 240d1900

ifg_cam_240d1908.tif

⋮

250d0619.tif → 80%

phase stabil, leichtes Moiré:

3mm ↑, y-pos o.k.

Vergleich verschiedener Blendenpositionen auf Kamerabild

beampos_z9_y4.tif

8
7

	% (1pos)	mean Inten.
ifg_3p_10s_250d0957.dat	76,1%	4772/10s
ifg_3p_10s_250d1006.dat	76,7%	4751/10s

Pl. Sh. Platte kopfüber gedreht

→ ifg-cam_250d1037.1.f → exakt gleiches plane image

box einbau: Tpos und robotRot nach Laser, Tilt nach Wasserwaage

(robotZ -250d1330 → z_{IN} = 286500
nochmal größere Blende)

5
8 robotZ_250d1338.dat z_{IN} = 284800

z_{out} = 252000 (über IFM)

ifg_3p-10s_250d1350 @ z_{out}

1359 @ z_{out} 74%

Temperatur Box_Quick_250d1522 → T = 24,3

Magnetprimer reicht

Traub mit „DC linear drive"

11	Peakrep.
8	0,00087

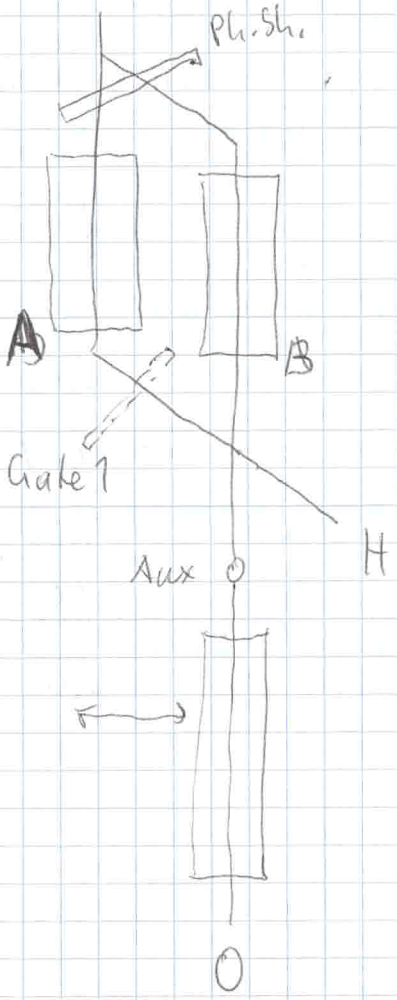
R_250d1739.dat	DC Linear drive: 8	0.0013527
R_250d1447.dat	DC Linear drive: 7	0.0013311
R_250d1752.dat	DC Linear drive: 9	0.0013492
R_250d1758.dat	DC Linear drive: 10	0.0013068
R_250d1804.dat	DC Linear drive: 11	0.0012403
R_250d1810.dat	DC Linear drive: 12	0.0011905
R_250d1815.dat	DC Linear drive: 6	0.0012894
R_250d1821.dat	DC Linear drive: 5	0.0011912
R_260d0859	8	0,0013564
0957	8.5	0,0013547

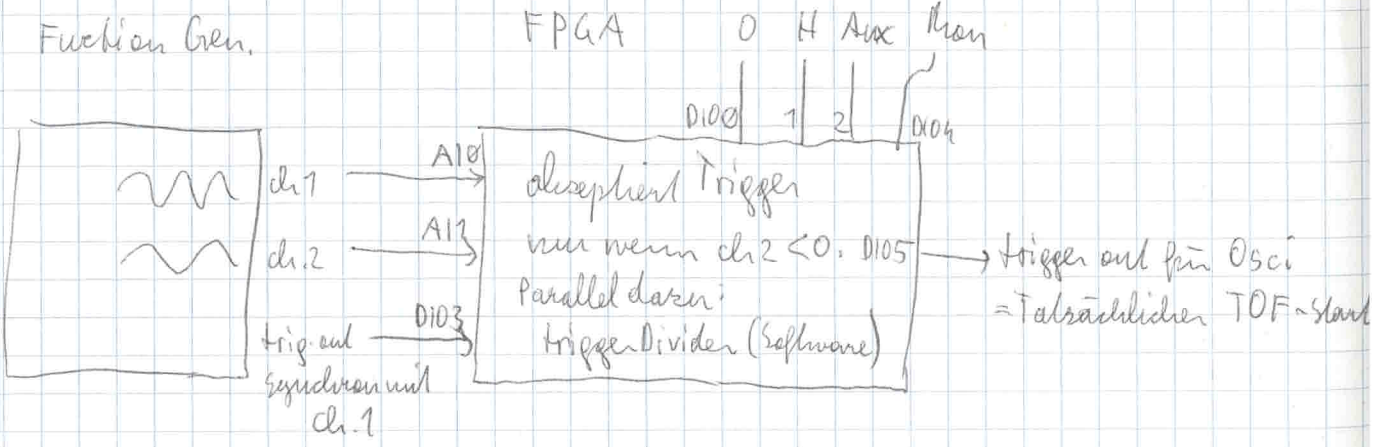
26.10.23

Trans(X_26Oct1636.inf)
Trans(X_26Oct1725.inf)
→ Supermirror: { Translation X = 15, Translation Y = 9

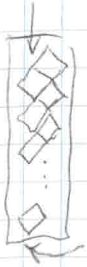
Current (DC) [A]	Coil A (Coax 3) [mT]	Coil B (Coax 5) [mT]
0.24	0.26	0.27
0.5	0.52	0.52
0.74	0.75	0.72
1.0	1.03	1.02
1.24	1.27	1.21
1.5	1.55	1.55
1.74	1.81	1.83
2.0	2.00	2.02

27.10.2023


Ph.Sh.
A
B
Gate1
H
Aux
O


Fuction Gen.
FPGA
O
H
Aux
Mon
D100
1
2
D104
ch1
ch2
trig. out synchron mit ch.1
A10
A11
D103
Parallel dazu:
Trigger Divider (Software)
D105
→ Trigger out für Osci
= Taktzählichen TOF-Start

Box out (above IFM), 2 bzw. 3 kHz



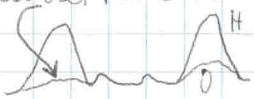
Gate 1 closed, Supermir. IN, R_270d 1438 → linker Peak hat noch 10% ~~wird voll gelöscht~~

OUT 1451

IN 1504

Feld linear evt. mit Nulldurchg.

linker Peak hat noch 10%



Polarizer gedreht 180° um z-Achse

DC lin. 8,5 mit Supermir., R_270d 1529

DC lin.	peak sep. H	Max in 5s			Counts falsch polarisiert
8,5	0,00135	1303	1309	R_270d 1529	20
7,5	0,00133	1273	1256	38	15
6,5	0.00129	1310	1238	44	45
9,5	0.00135	1313	1238	53	40

rückläufend: in dieser Orientierung hat das Streufeld am Spiegelfeldsensor bewirkt, dass das CF umgepolt hat → daher Depolarisierung

alle Magnet prüfen

überstehendes Ende max 5,5	ipm 4				
		0,00129	706	686	R_270d 1615
4.5	4	0.00127	737	685	1631
4.5	3	0.00127	745	701	1652
4.5	2	0.00124	662	691	1701
6.5	2	0.00123	746	745	1711
6.5	5	0.00128	687	737	1722
6.5	4	0.00128	749	757	1731
6.5	6	0.00128	683	705	1741 (1. Prisma ohne Cd)
6.5	6	0.00133	610	596	1753 mit Cd
5.5	6	0.00130	705	667	1807
5.5	4	0.00131	642	715	1816

28.10.23

alle Mag.Pr. ~~wurde~~ aus dem Strahl gedreht, gate 1 closed, R_280d 1613, supermir. OUT

neuen Polarizer eingebaut, dessen Streufeld weiter bis zum Spiegelfeldsensor → CF formal auf -35 Counts

mit 2 Zusatzmagn. am Ausgang

R_280d 1628

Supermirror IN: 1635 → keine falsch pol. Neutronen

mit μ-Metallblende zw. Polarizer und AF-Sensor R_280ct1710 → Depolarmeß

neuer Polarizer mit 2 Zusatzmagneten am Ausgang + μ-Metallblende, um AF-Sensor nicht zu „überbarken"

R_280ct1730 ca. 1% depol.

DC Lin.	peak sep. H	Max in 5s		
6.5	0.00122	2562	2388	R_280ct1844
7.5	0.00130	2632	2589	1853
8.5	0.00134	2794	2619	1900
→ 9.5	0.00135	2782	2720	1907
10.5	0.00133	2893	2735	1913
11.5	0.00128	2762	2790	1919

Temperatur_Box_280ct2209.inf

beide Spulen an mit 46Hz, $1V_{pp}$ = 900mA Pk/Pk am clip
max 18% contr. (nicht zeitaufgelöst) gate1 closed !!
bei 24.3°C

30.10.23

Aux-Detektor: position = 11 „Superspiegel 2"

kHz	2 periods/μs	bin
20	100μs	1μs
30	~~50~~ 67	0,67
40	50	0,5
50	40	0,4
60	33	0,33

move PS_90_30 Oct 1136 kein Kontr., gate1a
↓ 1146
stellt Ph.Sh auf Maximum in 0

Cond.	Frequenz und clip			wave90		
106,8nF	80 kHz 10V 1,75 V_{pp}	→ 17.5A	24,7°	0%	100V	30 Oct 1403
106,8nF	80 kHz 5V 1 V_{pp}	10A	24,5°	0%	50V	30 Oct 1420, 1424
101nF	80 kHz 2,5V 440mV	4,4A	24,5	60%		30 Oct 1441, 1437
122,8nF	60 kHz 5V 720mV	7,2A		—		
122,8nF	60 kHz 10V 1.42V	14.2A		—		
122,8nF	60 kHz 2.5V 384mV	3.8A		60%		i521 ✓
—"—	60 kHz 5V 730mV	7.3A		0%		
590nF	30 kHz 5V 1,14V	11.4A		0%		
590nF	30 kHz 2.5V 600mV	600mA		19%		1540, 1543 ✓
590nF	30 kHz 1V 248mV	2.5A		60%		i602,

über Nacht: DC angelegt, Messung des Phasenshifts ~~für~~ abh. vom Strom

Spule A = −5A, In/Out-Interferogramm mit Spule B = ±5A alpha-ifg-30Oct172

4

:

4

:

I_A	I_B	$x_B - x_A$		laser on-off	
on −3	+3	0	$2\cdot x(3)$	}	6x
off	−3	$2\cdot x(3)$	0		
on −2	+2	0	$2\cdot x(2)$	}	4x
off	−2	$2\cdot x(2)$	0		
on −1	+1	0	$2\cdot x(1)$	}	2x
off	−1	$2\cdot x(1)$	0		
on 1	+1	$-2\cdot x(1)$	0	}	2x
off	−1	0	$2\cdot x(-1)$		
on 2	+2	$-2\cdot x(-1)$	0	}	4x
off	−2		$2\cdot x(-2)$		
	⋮		0		

hier on/off vertauschen um Vorzeichen umzudrehen

alle 4A zeitlicher Kontr.
5A: 12%
4A:

35,7°/A ←

31.10. 6h: 11 56MW
9:17: 55MW, vorher 57MW

Spulenfenster mit Stufplatte verklebt: jetzt bei 5A ~25% Kontrast
Test mit alpha-ifg-31Oct1026.dat

Phasenshift $\varphi = \frac{\mu B(n\lambda)D}{(2\pi t_1)^* t} \qquad v = \frac{D}{T} = \frac{D}{m} = \frac{t_1 k}{m} = \frac{t_1 2\pi}{\lambda m} \qquad \varphi = \frac{\mu B D}{v t_1} = \frac{\mu B T}{t}$

$T = \frac{\varphi t}{\mu B}$

alpha-ifg: bei ±4A ist der Kontrast für +4 u. −4 verschieden ??

Kepco für Spule B liefert mehr Strom als Kepco für Spule A

z.b. 4.2A 4.0A

3.157 3.0

Freq-test_310ct1218 10kHz ... 60kHz, Cond. = 222,8 nF
Ströme sehr variabel

Freq_test_310ct1437.inf 10 kHz ... 60 kHz, C = 758 nF

16:00 54 MW
16:30 53

Freq-test_310ct1702.inf → Freq_test_long_310ct1702.inf, C = 758 nF

$$I_0 = 1 + \cos\left(\chi - \frac{\mu B}{\hbar w} \sin\frac{\omega T}{2} \cdot \sin\omega t\right)$$

↓
soll const. sein, daher $B \propto w$

f [kHz]	I @ Stromzange [A_{pp}]	Ampl. @ Funktionsgenerator [V]
10	0.63	2.1
15	0.95	2.0
20	1.27	1.6
25	1.58	1.0
30 (f_{res})	1.9	0.8
35	2.21	1.55
36	2.28	1.75
37	2.34	2.0
38	2.41	2.25
39	2.47	2.5
40	2.53	2.8
41	2.6	3.05
42	2.7	3.4
43	2.72	3.6
44	2.79	3.95
45	2.85	4.25
50	3.17	6.0
55	3.48	7.8
60	3.8	9.8

1.11.23

alpha-ifg-ON/OFF-01Nov1243.inf

→ $\varphi = 43.5°/A$

→ $1A \triangleq 0{,}34\,mT$

Ströme in Spule A u. B mit Multimeter abgeglichen

A	B einstellen; um Sollwert zu erhalten:
5A	4.75A
4A	3.8A
3A	2,86
2A	1,91
1A	0.9

= 222,8 nF

$_2$, C = 758 nF

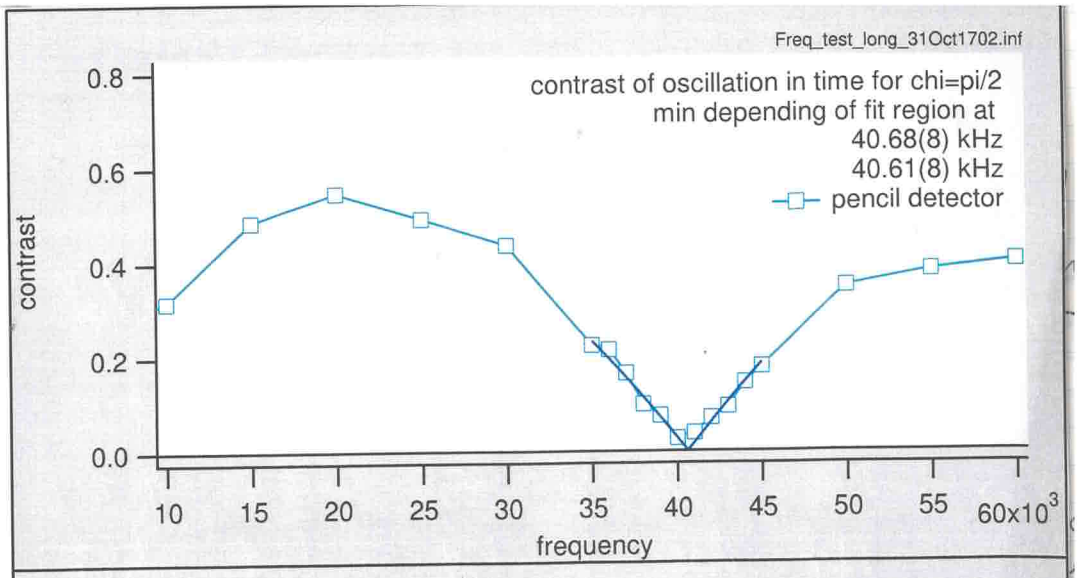
1702.inf, C = 758 nF

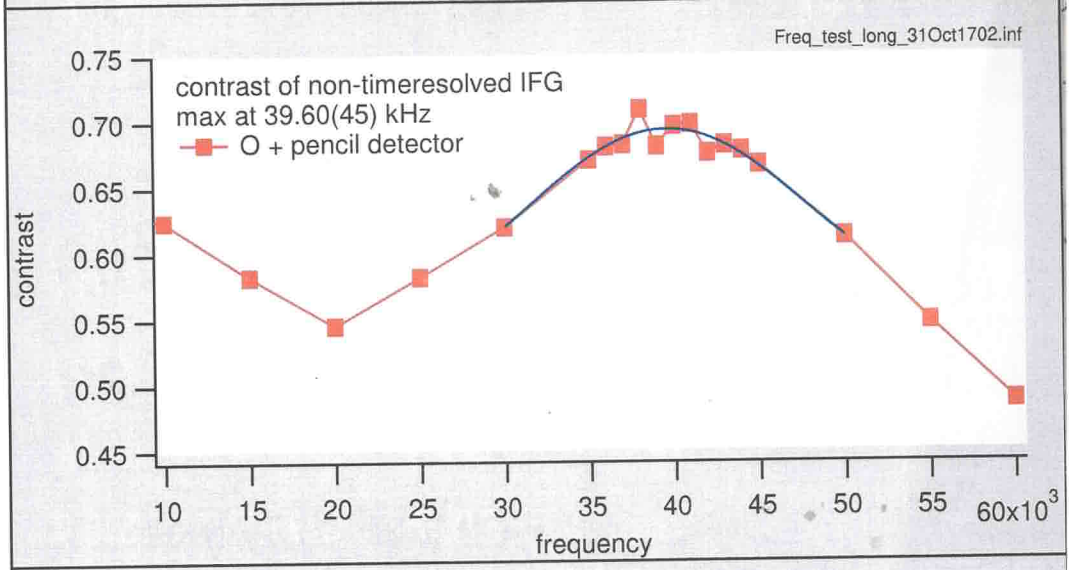
ktions generator [V]

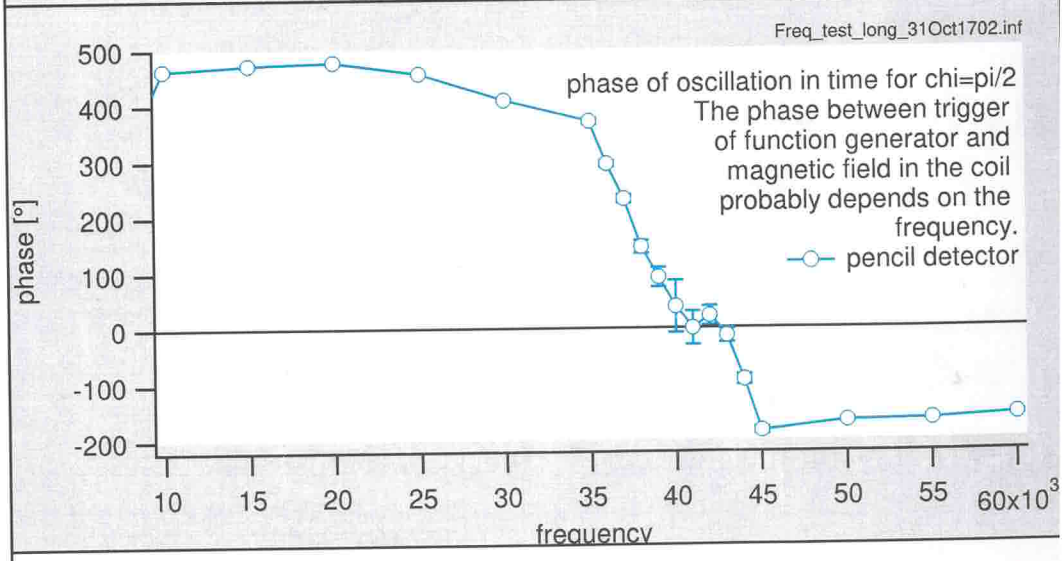
2.1
2.0
1.6
1.0
0.8
1.55
1.75
2.0
2.25
2.5
2.8
3.05
3.4
.6
.95
.25
.0
.8
.8

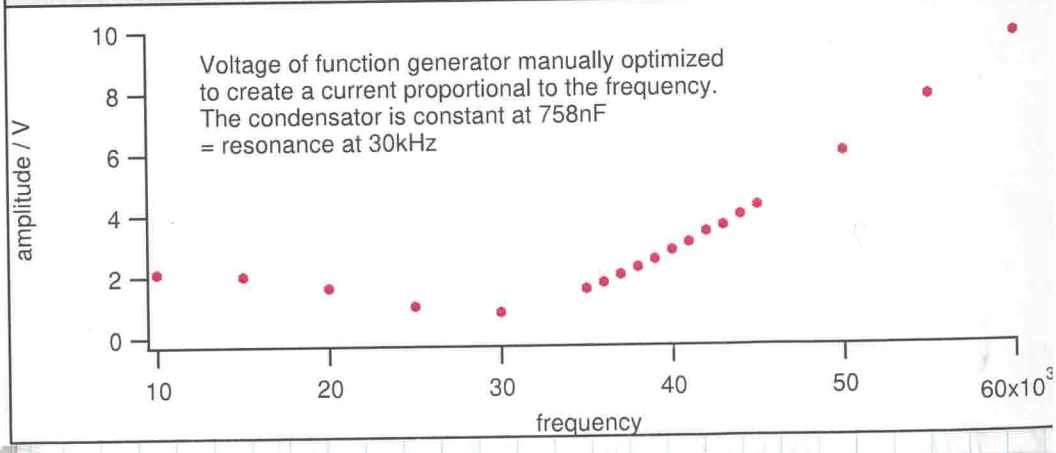
Multi
B und ~~Voltmeter~~

um Sollwert zu erhalten:









~~1.11.23~~

~~alpha_ifg_ON_01Nov1243.inf~~

z.b. 1,1515 V_{pp} $\hat{=}$ 1 V_{pp} = 0,1 A_{pp}

Spannung Func.Gen. V_{pp} / 1,1515 = Stromrange V_{pp} * 10 = Strom I_{pp}

gemessen für 4kHz, alle Cond. ein (blaue Box) 7,41 µF

4kHz in Spule A = Pfad 1

B_Verl_01Nov.1802.inf move X to $\frac{\pi}{2}$ before each TOF → creates a π jump at 5 Hz TOF
corrected by rotating TOF by half a period = 12,5 µs.

Strom [A]	0,4	0.8	1,2	1.6	2	2,4	2.8	3.2	3.6	4	4.4	4.8	5.2	5.6	6
Stromrange am Oszi [mV$_{pp}$]	40	80	120	160	200	- - -									
Ampl Func.Gen. [V$_{pp}$]	0,44	0.89	1.35	1.8	2.26	2.74	3.21	3.68	4.16	4.55	5.08	5.51	6.02	6.46	6.96

linear fit → $\frac{V_{pp}\ \text{Func-Gen.}}{\text{Strom}\ A_{pp}} = 1,1515$

Vergleich B_Verl_Messung mit Theorie: 1A amplitude $\hat{=}$ 1mT

agrees with Sammeler-DC-Measurement,

disagrees with alpha_ifg_ON/OFF (phase shift by DC fields)

~~move X to $\frac{\pi}{2}$ before each TOF → π jump at~~

2.11.23 coil A

B_Verl_long_2kHz_02Nov

movePS_90_02Nov1523.dat
X readjusted only once, since X was very stable

second condens. box parallel to first one 11,32 µF in total

$\frac{V_{pp}\ \text{Func Gen.}}{A_{pp}\ \text{current dip}} = 1,6684$

current A_{pp}	1	2	3	4	5	6
current dip osc. V_{pp}	100	200	300	400	500	600
ampl V_{pp}	1.55	3.3	5.0	6.73	8.35	10

2D-Rabitheorie fit:

1,027(5) mT/Amp

↓ amplitude, not Pk-Pk

3.11.23

α	Coil A @ 2kHz C = 1.638 μF I_{pp} [mA]	[mV_{pp}]¹	[V_{pp}]²	Coil B @ 2kHz C = 1.1339 μF I_{pp} [mA]	[mV_{pp}]¹	[V_{pp}]²
π/16	182.8	18.3	2.01	182.8	18.3	2.02
π/8	365.5	36.6	4.12	365.5	36.6	4.127
π/4	731	73.1	8.36	731	73.1	8.43

$\alpha = \frac{2\mu B}{\hbar\omega} \sin\frac{\omega T}{2}$

$T = \frac{1}{40660}$

$B = 1{,}03 \cdot 10^{-3} \cdot I$

α	Coil B @ 3kHz C = 1.1339 μF I_{pp} [mA]	[mV_{pp}]¹	[V_{pp}]²
π/16	183.7	18.4	1.337
π/8	367.3	36.7	2.74
π/4	734.7	73.5	5.57

¹ Current clip @ oscilloscope

² Ampl. @ funktionpen.

TOF_vs_chi_A_19pt_pi16_1500s_03Nov1230.inf
TOF_vs_chi_A_19pt_pi4_600s_03Nov1625.inf
TOF_vs_chi_A_19pt_pi4_1200s_03Nov2326.inf
} not in the rocking peak → R_03Nov2319

4.11.23

TOF_vs_chi_B_19pt_pi4_1200s_04Nov1031.inf
ifg_TOF_A_pi8_04Nov1712
TOF_vs_chi_A_19pt_pi8_1200s_04Nov1722.inf
ifg_TOF_B_pi8_04Nov2345
TOF_vs_chi_B_19pt_pi8_1200s_04Nov2355.inf → f was 3kHz

5.11.23

R_05Nov1218
ifg_TOF_A+B_off_05Nov1230
TOF_vs_chi_B_19pt_pi8_1200s_05Nov1240.inf
TOF_vs_chi_A_19pt_pi16_1200s_05Nov1913.inf

6.11.23

TOF_vs_chi_B_19pt_pi16_1200s_06Nov0126.inf
ifg_TOF_A+B_off_06Nov1029
ifg_TOF_A+B_off_06Nov1058
R_06Nov1126
TOF_vs_chi_A_19pt_100s_06Nov1154.inf @pi8
TOF_vs_chi_B_19pt_100s_06Nov1229.inf @pi8
ifg_TOF_A+B_off_06Nov1325
ifg_-5to5_10s_06Nov1347 → C ≈ 63 %
Temperatur_Box_Quick_06Nov1442.inf
Temperatur_Box_06Nov1532.inf → 24.2 °C, C ≈ 73 %
TOF_vs_chi_A_22pt_pi8_1200s_06Nov1855.inf

7.11.23

TOF_vs_chi_B_22pt_pi8_1200s_07Nov0219.inf
rocking_07Nov0956.inf
ifg_3p_10s_07Nov1008.inf
TOF_vs_chi_B_22pt_pi16_1200s_07Nov1016.inf
rocking_07Nov1744.inf
ifg_-2to2_30s_07Nov1755.inf
TOF_vs_chi_A_22pt_pi16_1200s_07Nov1808.inf

$$\frac{1}{T}\int_0^{T} I_0(\chi,t)\,dt = \frac{1}{2} + \frac{J_0(2)}{2}\cos\chi \iff \left(T = n\frac{2\pi}{\omega} \vee T >> 0\right) \wedge \beta_1 >$$

$\alpha = \frac{\pi}{4}$ → contrast reduced of ~ 15%

$\alpha = \frac{\pi}{8}$ → " " " ~ 4%

$\alpha = \frac{\pi}{16}$ → " " " ~ 1%

Need more IFGs.

8.11.23

TOF_vs_chi_A_22pt_pi4_1200s_08Nov 0132 .inf

TOF_vs_chi_B_22pt_pi4_1200s_08Nov 0856.inf

rocking_08Nov 1651.inf

movePS_45_08Nov 1704.inf

B_test_Long_3kHzB_08Nov 1721.inf

3.3 μF	
2.2 μF	ON
1 μF	ON
470 nF	ON
220 nF	
100 nF	ON
68 nF	ON
33 nF	
15 nF	
6.8 nF	

BOX A (BLUE)

PARALLEL

3.3 μF	
2.2 μF	
1 μF	ON
500 nF	ON
230 nF	
100 nF	
68 nF	ON
33 nF	ON
15 nF	ON
6.9 nF	ON

BOX B

3.3 μF	
2.2 μF	
1 μF	ON
500 nF	ON
230 nF	
100 nF	ON
68 nF	
33 nF	ON
15 nF	
6.9 nF	

BOX B2

coil B, 3kHz, capacitor = 11792.9 μF (2 boxes) to obtain 6 A_{pp} with 70 V_{pp} func. gen.

TOF width 666.66 μs, (2 periods), ch. width = current clip

rocking_08Nov1651 0,47848

movePS_45_08Nov.1702

B_test_Long_3kHzB_08Nov1721

(check frequency of trigger)

9.11.23

ifg_Vs_B_3kHz B_09Nov1137.inf

ifg_[redacted]-2to2_15s_09Nov1403.inf

ifg_-2to2_30s_09Nov14[redacted].inf

rocking_09Nov1427.inf

ifg_-2to2_30s_09Nov1438.inf

rocking_09Nov1558.inf

ifg_-2to2_30s_09Nov1609.inf

rocking_09Nov1626.inf

ifg_-2to2_30s_09Nov1637.inf

NEW SETTINGS (CAPACITOR BOXES / CURRENT VALUES / T, B/I$_c$)

BOX A (BLUE)

3.3 μF	
2.2 μF	
1 μF	ON
470 mF	ON
220 mF	
100 mF	
68 mF	
33 mF	ON
15 mF	ON
6.8 mF	

C = 1.35 μF

BOX B

3.3 μF	
2.2 μF	
1 μF	ON
500 mF	
230 mF	
100 mF	
69 mF	
33 mF	ON
15 mF	
6.9 mF	

C = 1.33 μF

I_{pp} = CURRENT PEAK TO PEAK

V^1_{pp} = VOLTAGE CURRENT CLIP

V^2_{pp} = VOLTAGE FUNCTION GENERATOR

$$\alpha = 2\mu \frac{B}{I_c} \sin\left(\frac{\omega T}{2}\right)$$

$T \approx 24.5881\ \mu s$

$\frac{B}{I_c} \approx 1.03\ \frac{mT}{A}$ $\Rightarrow$

I_c ↑ CURRENT (ampl, not Pk-Pk)

TOF_A+B_pi16_1200.sc

time = 1200 s, period = 1000 μs

binwidth = 16.6667, trigdiv = 2

TOF_A+B_pi8_1200.sc

COIL A (2 kHz)

α	I_{pp} [mA]	V^1_{pp} [mV]	V^2_{pp} [V]
π/16	169.91	17.0	2.01
π/8	339.82	34.0	4.12
π/4	679.64	68.0	

COIL B (3 kHz)

α	I_{pp} [mA]	V^1_{pp} [mV]	V^2_{pp} [V]
π/16	170,76	17.1	2.01
π/8	341,52	34.1	4.12
π/4	683,04	68.3	

TOF_vs_chi_A+B_pi16_1200s_09Nov1808.inf

10.11.23

TOF_vs_chi_A+B_pi8_1200s_10Nov0133.inf

iAg_-2to2_30s_10Nov0953.inf

NEW SETTINGS (CAPACITOR BOXES)

BOX A

3.3 μF	ON
2.2 μF	ON
1 μF	ON
470 nF	ON
220 nF	ON
100 nF	ON
68 nF	ON
33 nF	ON
15 nF	ON
6.8 nF	ON

C = 7.4128 μF

BOX B

3.3 μF	ON
2.2 μF	
1 μF	ON
500 nF	ON
230 nF	
100 nF	ON
68 nF	ON
33 nF	ON
15 nF	
6.8 nF	ON*

* FROM 13:43

C = 5.002 μF

10:00 a.m. - 11:00 a.m.: Reactor increased power from ~56 MW to ~58 MW

The analysis of TOF_vs_chi_A+B shows a frequency resolution of 1 kHz, we want to increase it to 0.5 kHz in order to have 1 point between 2 kHz and 3 kHz.

TOF_A+B_pi16_1200_2xbin.sc ← period = 2000 μs, binwidth = 16.667 μs.

NOTE: TO CHANGE FREQUENCY RESOLUTION CHANGE PERIOD LENGTH, NOT BIN NUMBER/WIDTH

(confusing name, it should have been "4 Periods")

TOF_vschi_A+B_22pt_pi8_1200s_2xbin_10Nov1156.inf

TOF_A+B_pi16_1200_4P.sc ← period = 2000 μs, binwidth = 16.667 μs

2:45 → 57 MW

α	I_{pp}^{A} [mA]	I_{pp}^{B} [mA]	V_{pp}^{A1} [mV]	V_{pp}^{B1} [mV]	$V_{pp}^{A,B\,2}$ [V]
$\pi/16$	169.91	170.76	17.0	17.1	0.410 / *0.415
$\pi/8$	339.82	341.52	34.0	34.1	0.835 / *0.843
$\pi/4$	679.64	683.04	68.0	68.3	1.7
$\pi/2$	1359.28	1366.08	135.9	136.6	3.4
π	2718.56	2732.16	271.86	273.2	6.85
$5\pi/4$	3398.2	3415.2	339.8	341.5	8.5

TOF_vs_chi_A+B_22pt_pi8_1200s_4P_10 Nov 2138.inf

(changed "2x6in" to "4P")

.11.23

TOF_vs_chi_A+B_22pt_pi16_1200s_4P_[redacted] Nov [redacted]502.inf

Wrong trigger settings, trigdiv=2 instead of 4. Also α [redacted] seems overestimated, changed $V_{pp}^{A,B\,2}$ → 0.415, 0.843 for $\pi/16$, $\pi/8$.

Repeat ~~all~~ measurements

TOF_vs_chi_A+B_22pt_pi16_1200s_4P_11 Nov 1354.inf

13:00 → Reactor power decreased, value at 16:00 [redacted] is ~56 MW

TOF_vs_chi_A+B_22pt_pi8_1200s_4P_11 Nov 2118.inf

.11.23

ifg_-2 to 2_30s_12 Nov [redacted]0443.inf

TOF_vs_chi_A_22pt_pi2_1200s_12 Nov 0455.inf

ifg_-2 to 2_30s_12 Nov 1219.inf

TOF_vs_chi_A_22pt_pi_12 Nov 1[redacted]232.inf

In the last measurement, V_{pp}^{A1} (current elip) shows a lower value than expected: 268 mV instead of 271.86 mV ($\alpha = \pi$).
Same for the other values of α:

$\pi/2$ → 134 mV instead of 135.9 mV

$\pi/4$ → 67.2/67.8 mV instead of 68 mV

Therefore I changed the amplitude of the function generator to

1.715 → $\pi/4$

6.96 → π

3.455 → $\pi/2$

iFg_-2to2_30s_12Nov1956.inf

iFg_-2to2_30s_12Nov2048.inf

rocking_12Nov2037.inf (left peak) SPIN DOWN

TOF_vs_chi_A_22pt_pi4_SD_1200s_12Nov2101.inf

13_11_23

ifg_-2to2_30 Nov inf

TOF_vs_chi_A_22pt_pi2_SD_1200s_13Nov0438.inf

(Stopped at 21pt)

Inserted Indium in path 1 (1.8 mm)

ifg_-2to2_30s_ 13 Nov 1148.inf

rocking_13Nov1222.inf (Right peak) SPIN UP

TOF_vs_chi_A_In1_22p_pi16_1200s_13Nov1233.inf

INDIUM OUT

iFg_vs_A_2kHz B_13Nov2003.inf

There was a mistake in the script, maybe can be used for IFGs

iFg-vs_A_2kHz B_13 Nov 2129.inf

INDIUM IN (1.8 mm), PATH 1

14.11.23

iFg_vs_A_2kHz B_14Nov0129.inf

iFg_-2to2_30s_14Nov0308.inf

Something went wrong, CONTRAST = 1.2%. Next measurement seems ok. Probably the function generator was still on.

TOF_vs_chi_A_In1_22pt_pi8_1200s_14Nov0321.inf

iFg_-2to2_30s_14Nov1046.inf

CONTRAST≈0.6187, but noisy IFG.

TOF_vs_chi_B_In1_22pt_pi16_1200s_14Nov1116.inf

From preliminary analysis it seems weird, interrupted to run IFG.

iFg_-2to2_30s_14Nov1340.inf

NOT VERY GOOD

It's a bit noisy, proceed with measurement. The previous TOF_vs_chi and the next have to be merged.

TOF_vs_chi_B_In1_22pt_pi16_1200s_14Nov1353.inf

iFg_-2to2_30s_14Nov1814.inf

TOF_vs_chi_B_In1_22pt_pi16_1200s_14Nov1927.inf

15.11.23

iFg_-2to2_30s_15Nov0151.inf

TOF_vs_chi_B_In1_22pt_pi8_1200s_15Nov0203.inf

TOF_vs_chi_A+B_In1_22pt_pi16_1200s_4P_15Nov0927.inf

TOF_vs_chi_A+B_In1_22pt_pi8_1200s_4P_15Nov2121.inf

In the last measurements, the intensity seems lower than expected. Run rocking curve and IFG.

rocking_15Nov1659.inf

ifg_-2to2_30s_15Nov.inf

Didn't help.

TOF_vs_chi_A+B_In1_22pt_pi8_1200s_4P_15Nov1739.inf

16.11.23

ifg_-2to2_60s_16Nov0106.inf

CHANGED INDIUM, NEW THICKNESS = 0.8 mm

$\frac{21}{31} \approx \frac{0.808}{0.588} \approx 1.375$

ifg_-2to2_60s_16Nov0142.inf

TOF_vs_chi_A+B_In1_08mm_22pt_pi16_1200s_4P_16Nov0206.inf

TOF_vs_chi_A+B_In1_08mm_22pt_pi8_1200s_4P_16Nov0830.inf

ifg_-2to2_30s_16Nov1655.inf

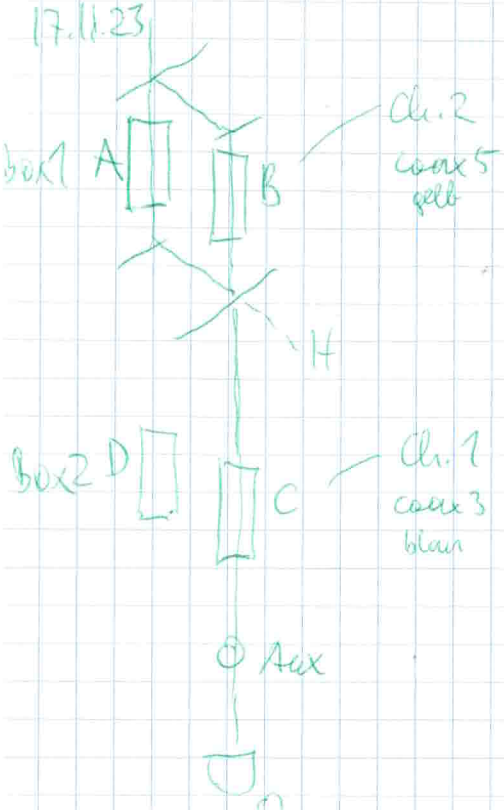
Measurement with 1.8 mm Indium has low intensity. Repeat with longer measurement time.

CHANGED INDIUM, BACK TO 1.8 mm

ifg_-2to2_30s_16Nov1720.inf

TOF_vs_chi_A+B_In1_22pt_pi16_2000s_4P_16Nov1733.inf

17.11.23



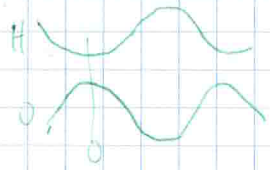
	HH	longitud.	
B	17,1 µH	28,8 µH	
C	18,6 µH	28,6 µH	} mit Wanne, noch diese Achse
D	18,9 µH	29,2 µH	
A	17,2 µH	28,9 µH	

Box B: ~~war~~ mit am Robot montiert.
justierbar gegenüber ~~Box~~ A:
manuell: 2 x Libl, z
motorisiert: y (DC Linear Hwy)

box2 pos_17Nov1451.dat → 6.0

Wanne: Haube → box1 → box2 → Haube (gate #1 closed)

1,8 mm Isolierung in A, gate open
coax out, ifg_2to2_155_17Nov1459



Feedback Comp:
~~gate 1 closed~~
R_17Nov1606
Auxpos 17Nov1611
1620 → 9,5 (before: 11,0)
gate 1 open
move PS_90_17Nov1636

χ = 90 beste TOF-Kontrast, $\ln \neq 0$
χ = ~~0,~~ ; $\ln(I/I_0) = 0$ meiste Intensität

Ch2: B: π/4 = 1,715 V Funktionsgen. ; phase 1 = 0
Ch1: C: π/4 · 1/3 = 1,143 phase 2 = variabel

$\alpha = \frac{\pi}{4} = 0,78$

Bisher:

	π/16	π/8	π/4
A:	0,425	0,85	1,715
B:	0,425	0,85	1,715

FT fbc1_17Nov_1645: ~~alle~~ inf

Strom:

			Ampl = 1,715	45,6 V_{pp}	} fast gleich, nicht 2:3
Ch2	B	ph=0			
Ch1	C	ph=0/60/120/180/240/300	1,143	46,8 V_{pp}	

beide 2kHz

A: alle an außer 33+6,8nF
Cond.-Box B: alles an

⇒ Ampl 1,715 → B: 68 mV Strom.
→ A ~~—~~

$\chi = 90°$ 16:45 $\varphi_1 = 0$

fbc1_17Nov1714 17:14 $\varphi_1 = 180, 240, 300, 0, 60, 120$

Zählrate unverändert bei φ_1

				mean counts 208	mean counts 46
#2	fbc0 (comp. off)				
	$\chi = 0°$ → falsch, war 45°	0,175 ?	ca -80°		
#3	fbc1_17Nov1833			249	40%
	$\chi = 45°$	0,5136 ?	ca -5°		
#4	fbc1_17Nov1938			335	9%
	$\chi = 0$	0.61523	✓ 0°		
#5	fbc1_17Nov2106			333	2%
	fbc0_17Nov2244 (comp off)		0°		0%

fbc2.sc
- am2 = 1,8
- am1 = 0, 0,6, 1.2, 1.8, 2.4 — 5x — 4.6 + 1 = 25
- ph1 = 0, 60, 120, 180, 240, 300 — 6x
- χ = 0, 45, 90 → phsh. 0.6, 0.85, 1.1 — 3x — x 3 = 75 → 14h

#6 fbc2_17Nov2328.inf @ $\chi = 90$ slight contr. dependence on ph1 for am1 = 0,6

#7 18Nov0546 45 flat 25%

#8 18Nov1203 0 flat 3%

18.11.23 1930 polarizer out, B @ 3kHz, A 2kHz,

TOF_vs_ch_A+B_ch1_22pl_pi4_1200s_4P_unpol_18Nov2039.inf → ok

B 19Nov0403 → trigger problem, TOF shows step in intensity

A 19Nov1127 → ok

condens. A — condens. B such that same V creates same current — 1,715 — 69 mVpp — TOF-ch. 3...12 have 2x intensity

all on

condens. B	
3.3 µ	+
2.2 µ	−
1.0 µ	+
500 n	+
230 n	−
100 n	−
69 n	+
33 n	+
15 n	−
6.7 n	−