

2024 Summer Semester at CERN - Intermediate

Cheng Chiu

ALPHA



Shift Work

ID	Run	Date	Subject	Type	Author
104226		Thu Jun 20 2024, 23:33	A2 e+ baseline	Positron Log	Cheng, Daniel
104174	70863	Wed Jun 19 2024, 00:41	Megastack [134 stacks,]	Trapping Series	Cheng, Daniel, Alvaro, Levi, Roy
104173	70862	Tue Jun 18 2024, 23:33	1 stack test [324k mix, 125 PC]	Trapping Series	Cheng, Daniel, Tom, Alberto
104172	70861	Tue Jun 18 2024, 23:18	ECR in E13 [28.89274 GHz, 1.03216 T]	Electron Log	Tom, Alberto, Usman, Daniel
104171	70861	Tue Jun 18 2024, 23:15	Carlsberg reset to 186.426 A	Hardware	Tom, Alberto, Usman, Daniel
104170	70861	Tue Jun 18 2024, 22:37	uwave A2 pbar lifetime	Microwaves	Tom, Alberto, Usman, Daniel
103985	70791	Fri Jun 14 2024, 17:37	486 progress - 486 power after optimizing light through trap	Lasers	Joos, Janko, Kurt, Cheng
103980	70791	Fri Jun 14 2024, 15:40	486 progress - 486 power after sending light through trap	Lasers	Joos, Janko, Kurt, Cheng
103932	70789	Thu Jun 13 2024, 13:47	486 progress - fiber between laser hut and DS laser box	Lasers	Joos, Cheng
103924	70789	Tue Jun 11 2024, 23:01	Megastack - Eric Carmen style - longer pbar well 2.075 V premix sequences [14293 pc, avg mix 28%]	Trapping Series	Alberto, Cheng, Nishant, Clara, Robert, Chris
103923	70787	Tue Jun 11 2024, 22:39	3 stack test - production sequences [332 pc, 227175 + 238147 + 233202 mix]	Trapping Series	Cheng, Alberto, Nishant
103922	70787	Tue Jun 11 2024, 22:39	ECR E13 [28.8740995 GHz, 1.03149 T]	Electron Log	Cheng, Alberto, Nishant
103920	70787	Tue Jun 11 2024, 21:54	3 stack test - production sequences [315 pc, 227139+233460+223800 mix]	Trapping Series	Clara, Alberto, Nishant, Cheng, Robert
103919	70786	Tue Jun 11 2024, 21:42	3 stack test + PRD - production sequences [unknown pc, 224937+233276+229268 mix]	Trapping Series	Clara, Nishant, Alberto, Cheng, Robert
103918	70787	Tue Jun 11 2024, 21:38	CT e- baseline [Step 1 - 8] - Shorter suck load (Sims) and faster block	Electron Log	Alberto, Cheng, Robert
103917	70785	Tue Jun 11 2024, 20:58	1 stack test - production sequences [unknown pc, 244629 max]	Trapping Series	Clara, Nishant, Alberto, Cheng, Robert
103916	70781	Tue Jun 11 2024, 19:01	Faulty 3 stack test - production sequences [0 pc, 758+788+622 mix]	Trapping Series	Clara, Maria, Tom, Nishant, Robert, Cheng
103910		Tue Jun 11 2024, 17:21	Fit of Centrifugal Separated Be+ [revival of Jack's code v6.1]	Analysis	Cheng, Kurt
103858	70749	Mon Jun 10 2024, 23:19	CT e- baseline step 1 [production sequence] [tuning e- load 106 subload 3 electrode well, 15.5V suckwell]	Baseline Log	Cheng, Jaspal

Message ID: 104242 Entry time: Fri Jun 21 2024, 03:09 In reply to: 104241 Reply to this: 104243

Author: Cheng, Daniel

Type: Trapping Series

Run: 70903

Subject: production - 3 stacks [1 bad shot] [331k mix, 320 PC]

Tags: Trapping Series,

Purpose:

eLog: SequencerEvents/176862 stack
 eLog: SequencerEvents/176863 clearing
 eLog: SequencerEvents/176864 FRD

eLog: BeLog/6953
 eLog: SpillLog/62476

AT RW1: eLog: RWLog/37245
 AT RW2: eLog: RWLog/37250
 CT RW1: eLog: RWLog/37265
 CT RW2: eLog: RWLog/37266
 POS: eLog: RWLog/37119

File	a	b	n	NNI	x	y	Calibrated#
0308_51_425	6.054E+1	2.813	2.163	2.341E+5	17.81	17.21	1.870E+5
0312_49_001	7.330E+1	2.338	1.820	2.110E+5	17.81	17.21	1.686E+5
0316_41_084	5.893E+1	2.854	2.248	2.316E+5	17.81	17.21	1.850E+5

File	Temperature_(K)	Error_(K)	Escape_Energy_(eV)	Escape_Time_(ms)
0311-33	3.83	0.566	0.5688	12.3445
0315-31	3920.0	4.3E-5	0.5723	12.3250
0319-23	96.3	5.7E-4	0.5671	12.3540

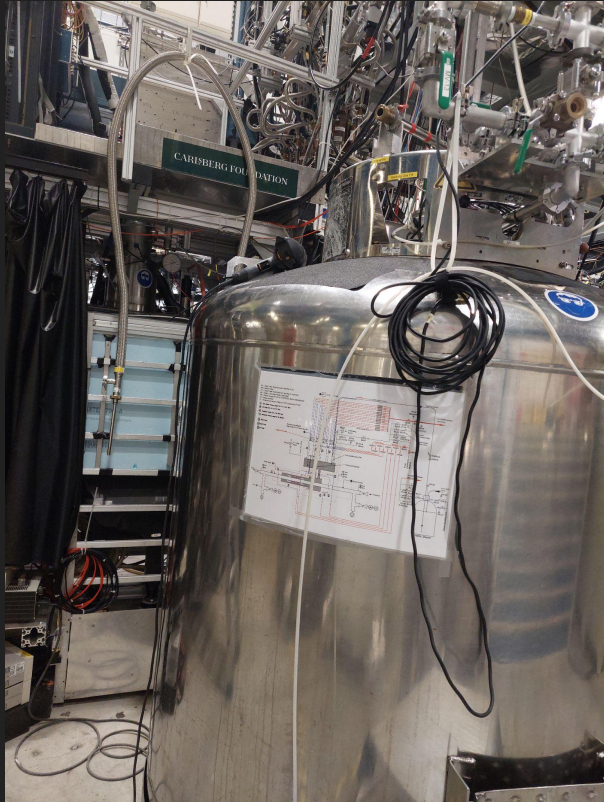
Stacking summary:

#	LINE0	CT_Hold	CT_Hot	CT_Tenth	RCT_Hold	RCT_Hot	Mixing	Right	Left
0	10.7003	87946	27794	10171	1877	79	319728	542	1165
1	2.92006	32353	7286	3049	468	10	114114	75	560
2	11.1577	89737	28003	10464	1659	28	342521	645	1130

eLog: 104242/7 all mixings
 eLog: 104242/8 FRD
 eLog: 104242/9 right dumps
 eLog: 104242/10 left dumps

- Data-logging
 - Baselines
 - Measurements

Shift Work

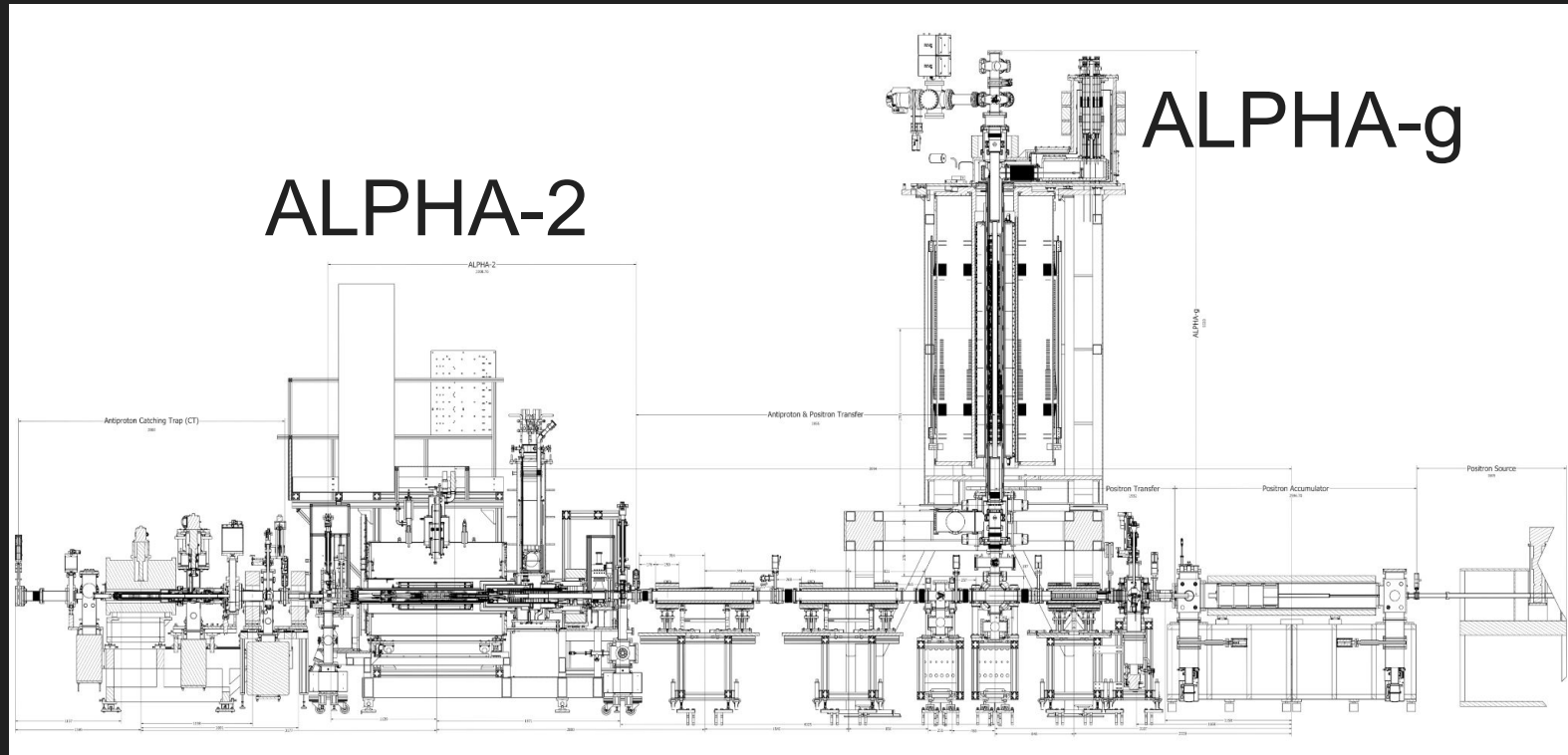


- Cryogenic Operation:
Liquid Helium / Nitrogen Transfer

Shift Work

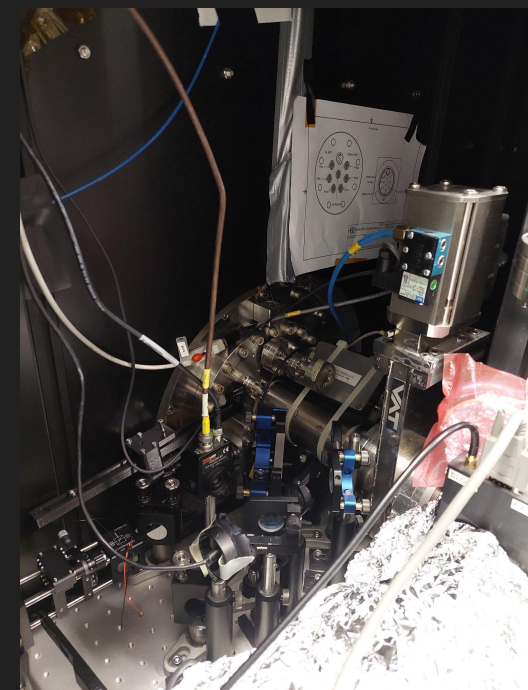
Helping in laser hut, moving racks and wires around, and more ...

486 nm Laser Alignment

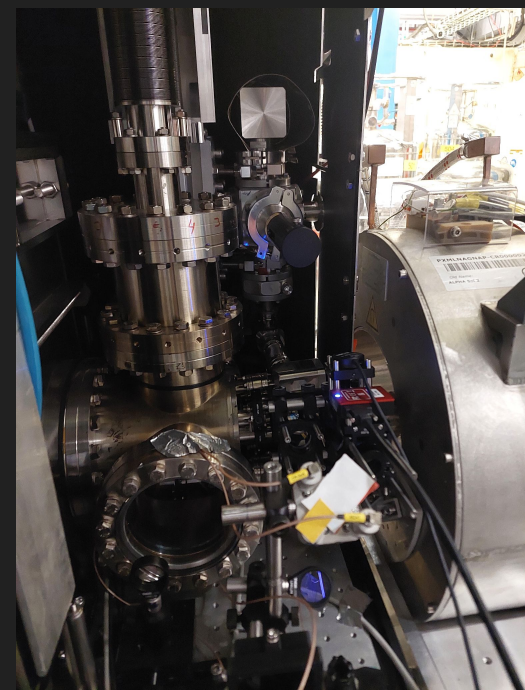
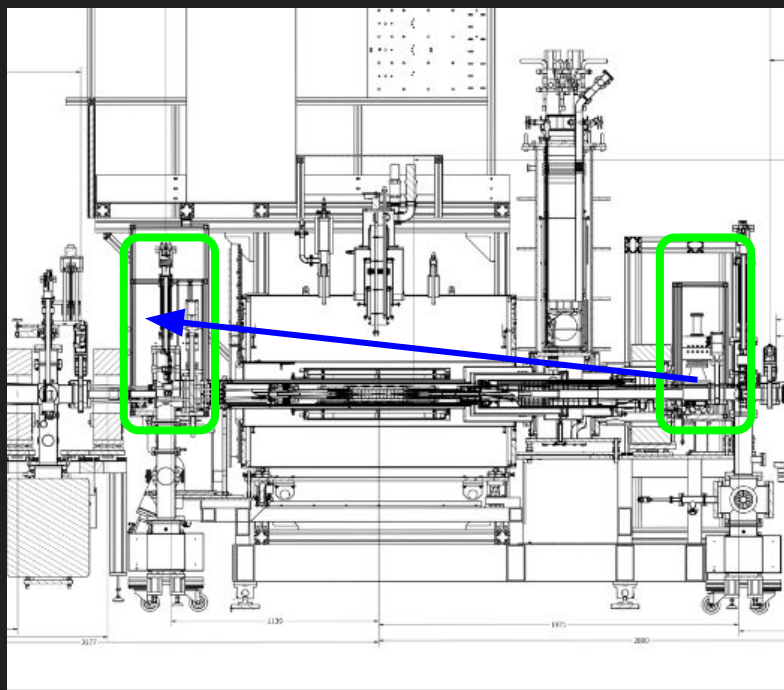


<https://alpha.web.cern.ch/how-alpha-works>

486 nm Laser Alignment

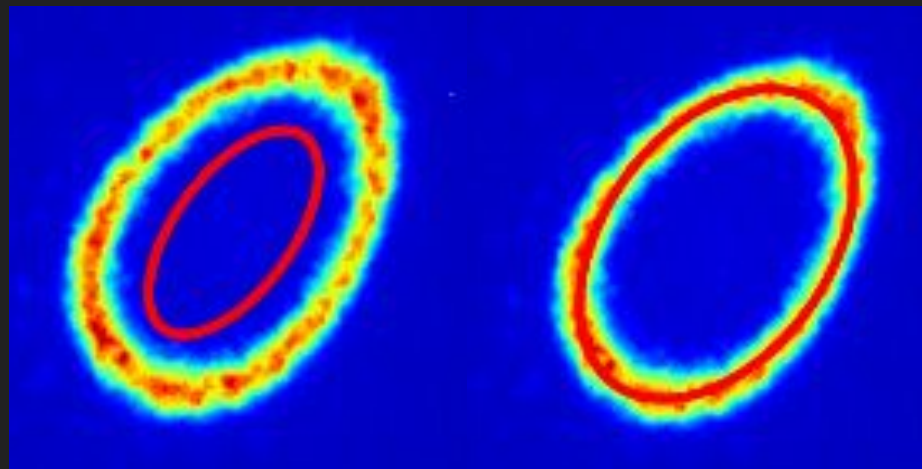
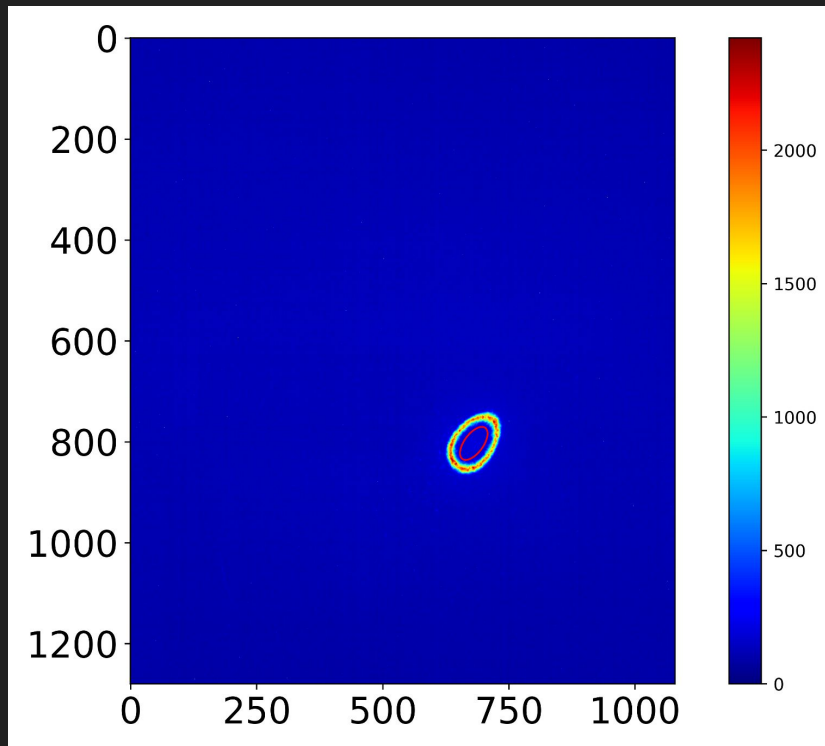


Upstream



Downstream

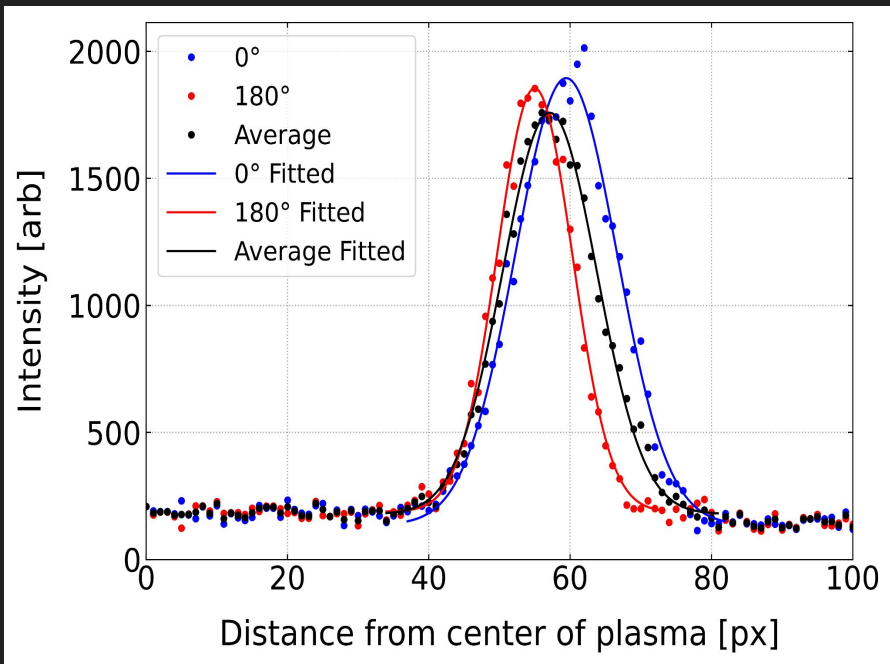
Be⁺ Profile in Sympathetic Cooling with e⁺



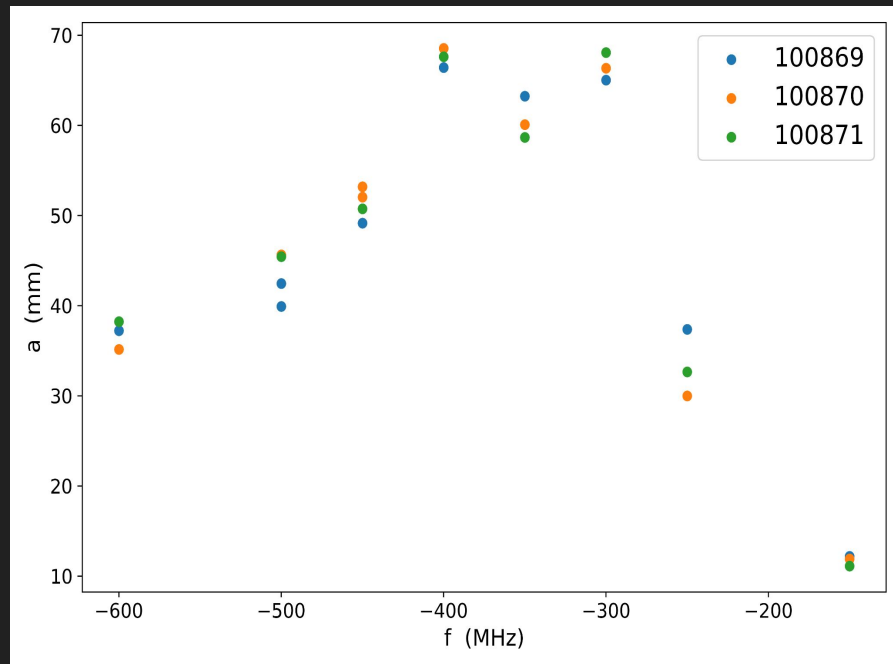
Previous Fitting

New Fitting

Be⁺ Profile in Sympathetic Cooling with e⁺



Be⁺ intensity along axes



Laser cooling detuning scan

Next Steps

- Find the averaged intensity along the elliptical path as a function of major/minor axis
- Proceed on simulation to data comparison to estimate the temperature of system
- Error analysis on parameter space
- Feasibility test of new species for sympathetic cooling

Working at Height - Using a Harness Training

No picture taken

but it was really fun and practical!

Culture

