



### **AD-ELENA status**



## Machine performances



	Vistar AD/EI	ENA				↑ _ □ X
D-ELENA Anti-proton production Vistar		<b>₩</b> 20°C		15 Apr 2024 W16		5 19:11:0 <b>8</b>
	AD	19:09:26	19:07:28	19:05:31	19:03:33	19:01:35
	PR.BCT	2034	2022	2020	2022	2014 <i>E<sup>10</sup></i>
	BCT9012	1855	1855	1847	1856	1852 <i>E<sup>10</sup></i>
	BCT9053	1718	1699	1716	1700	1722 <i>E<sup>10</sup></i>
	3570 ↔	4.66	4.64	4.54	4.67	4.68 <i>E<sup>7</sup></i>
	3570 →	4.47	4.45	4.35	4.47	4.48 <i>E<sup>7</sup></i>
	2000 ↦	4.47	4.45	4.35	4.47	4.48 <i>E<sup>7</sup></i>
Cycle Length 110.4s	2000 →	4.46	4.44	4.34	4.46	4.47 E <sup>7</sup>
Cycle Length 110.4sMeV/c Repet. Time 117.6s	300 ↦	4.54	4.52	4.43	4.55	4.55 <i>E<sup>7</sup></i>
	300 →	4.44	4.44	4.33	4.44	4.46 <i>E<sup>7</sup></i>
	100 <b>→</b>	4.35	4.32	4.22	4.34	4.34 <i>E<sup>7</sup></i>
	<b>1</b> 00 →	4.27	4.26	4.16	4.24	4.28 <i>E<sup>7</sup></i>
	- Transm.	91.56	91.62	91.58	90.79	91.48 %
	BCT7049	4.47	4.43	4.30	4.47	4.44 E <sup>7</sup>
PBPRD2	ELENA	19:10:52	19:08:55	19:06:57	19:05:00	19:03:02
STEP BASE BALLSA BASE BALLSA BASE BALLSA BASE BALLSA BASE BALLSA BASE BALLSA BASE BALLSA BASE BALLSA	Injection	46.81	46.64	45.47	46.59	47.07 E <sup>6</sup>
	Ejection	43.16	41.16	39.37	36.52	43.08 E <sup>6</sup>
	Transm.	92.2	88.3	86.6	78.4	91.5%
	LNE00	9.77	9.44	8.99	8.36	<b>9.81</b> E <sup>6</sup>
	LNE50	10.00	9.62	9.14	8.45	10.02 E <sup>6</sup>
Waiting for AD cycle		——Comment	s: (12 A)	or 2024 -	13:13:47)-	
	A C R: 7 6	688 o	or 766	89		
	-					

Note: pbars USER for this year is PBPRD2



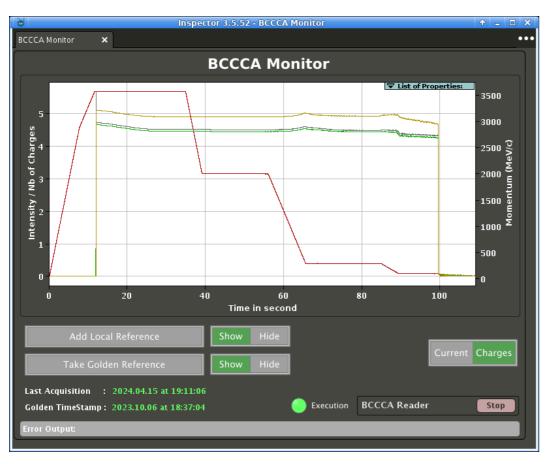


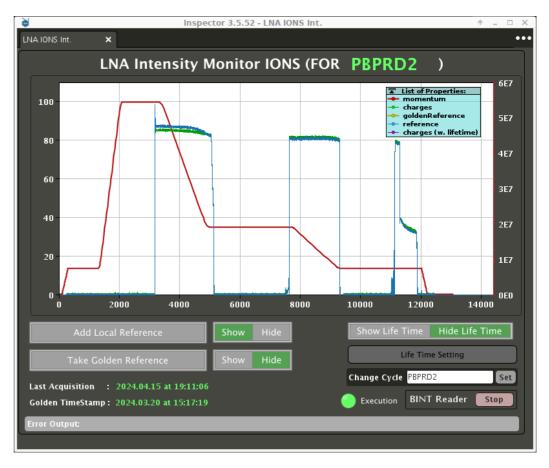
#### > Deceleration efficiency:

- > 90% in AD after sublimation
- 85-90% in ELENA (pbars) similar to last year but fluctuating

Intensities:

- 4.5e7 injected in AD with 1.7e13 protons on target: missing ~5% compared to last year
- ~4e7 injected in ELENA (without SEM grids IN), up to 9e6 pbars per bunch extracted from ELENA





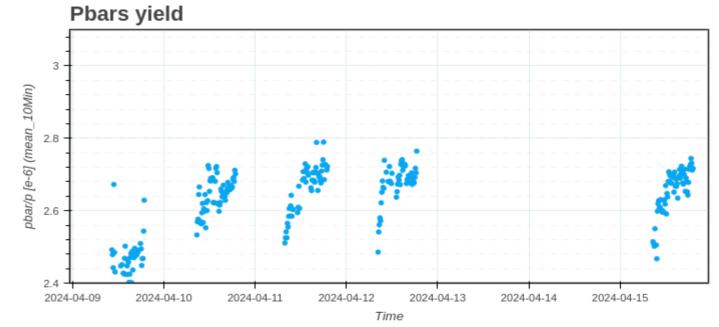


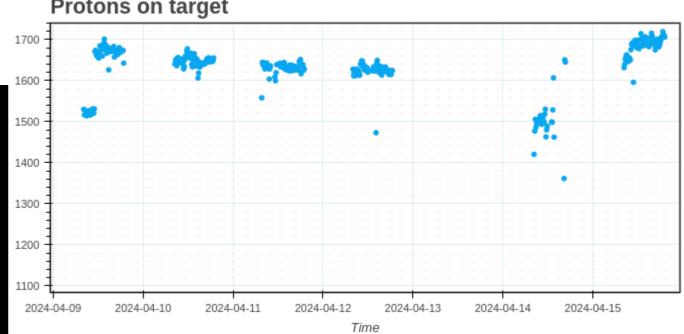
### Reproducibility



- Pbar yield need couple of hours to stabilize when start cycling
- Intensity on target changing along the week
- AD to ELENA transmission fluctuating:
  - ELENA deceleration efficiency between 80 and 90%

😆 🗊 ELENA 🛛 🗙	ADE × 📾 T	imber ×	Y frontend	× Vistars	5	× +	~ _ = ×			
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💪 Customer Portal 🔌 Red Hat 🔌 Red Hat Products D 🔌 Red Hat Enterprise 🔌 Red Hat Developer 🔌 Red Hat Container 🔌 Red Hat Hybrid Clo 📾 Timber										
ADE -						Lo	ogBook HELP			
AD-ELENA Anti-prot	on production Vis	star	<u>₩</u> 9°C		16 Apr 2024 W16		6 11:54:1 <b>8</b>			
		AD	11:52:38	11:50:28	11:48:19	11:46:09	11:43:59			
		PR.BCT	2052	2043	2047	2039	2052 E <sup>10</sup>			
	BCT9012	1881	1874	1869	1877	1865 E10				
	BCT9053	1705	1709	1691	1702	1706 E <sup>10</sup>				
	3570 ↔	4.50	4.55	4.46	4.57	4.48 E <sup>7</sup>				
	3570 →	4.33	4.39	4.29	4.42	4.33 E <sup>7</sup>				
	2000 ↔	4.33	4.39	4.30	4.43	4.33 E <sup>7</sup>				
Cycle Length 110 4a		2000 →	4.32	4.38	4.28	4.42	4.32 E <sup>7</sup>			
Cycle Length 110.4s Repet. Time 129.6s	MeV/	°300 ↔		4.47	4.37	4.50	4.42 E <sup>7</sup>			
				4.35	4.25	4.40	4.31 E <sup>7</sup>			
		100 ↦	4.20	4.25	4.15	4.28	4.21 E <sup>7</sup>			
		100 →	4.13	4.13	4.06	4.19	4.11 E <sup>7</sup>			
		<ul> <li>Transm.</li> </ul>	91.88	90.83	90.89	91.67	91.77 %			
		BCT7049	4.33	4.30	4.18	4.37	4.31 E <sup>7</sup>			
PBPRD2		ELENA	11:54:04	11:51:55	11:49:45	11:47:36	11:45:26			
I DI NDZ		<ul> <li>Injection</li> </ul>	37.08	37.12	36.28	37.49	36.74 E <sup>6</sup>			
PUNA PUNA PUNA PUNA PUNA PUNA	Ejection	31.28	33.84	33.72	28.88	33.03 E <sup>6</sup>				
	Transm.	84.4	91.2	92.9	77.0	89.9%				
	LNE00	5.26	5.62	5.71	4.87	5.45 E <sup>6</sup>				
		LNE50	0.00	7.08	7.13	6.15	7.01 E <sup>6</sup>			
Waiting for AD cycle			Comment	s: (12 A)	or 2024 -	13:13:47)				
ACR: 76688 or 76689										





#### **Protons on target**

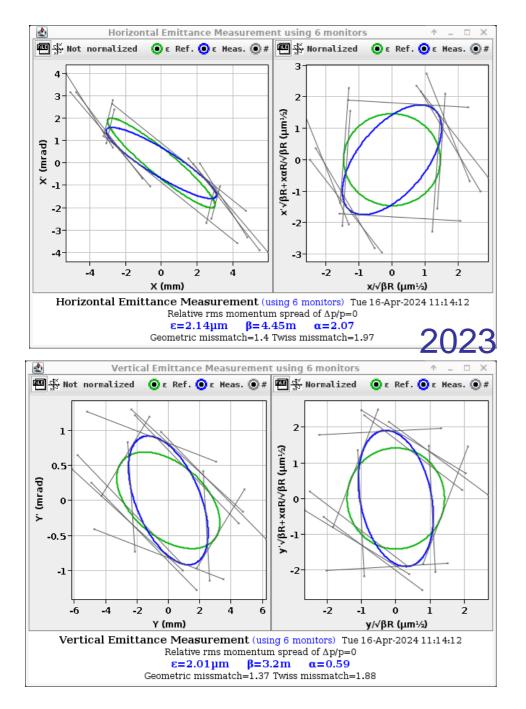


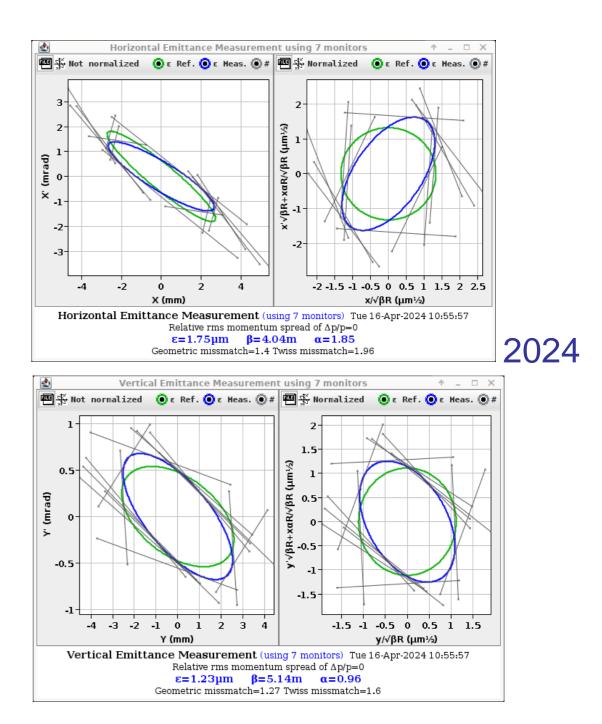
## **Machine performances**



#### >Emittances:

- 1.8/1.3 um in H/V, closer to nominal than last year (new working point in ELENA)
- Same longitudinal as last year







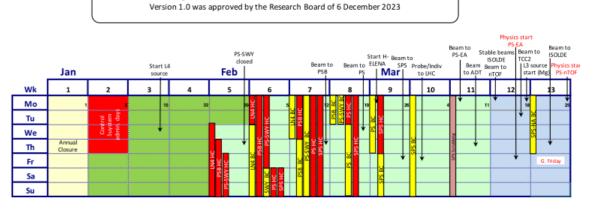
### Longer term plan



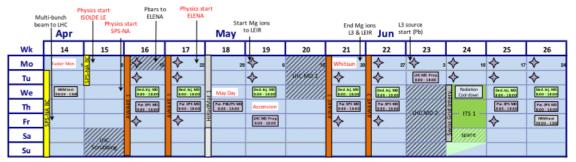
ver. 2.0

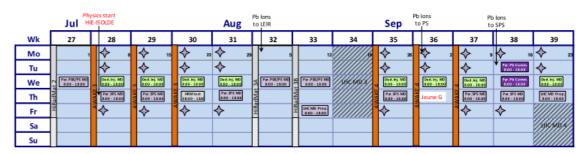
#### Start of physics 22/04:

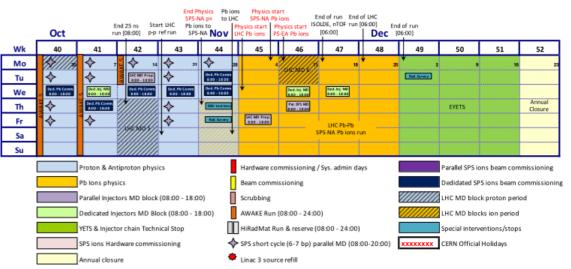
- We may need a but oftime during working hours to check your line trajectory
- > 2024 injectors schedule revisited (to be approved at the IEFC this week):
  - physics run till 2<sup>nd</sup> of December
  - 3 days TS week 24: restart of physics on Friday evening!!!
- >We will still request Wednesday for Machine Development
- > Operation of the Hminus source during working hours in parallell of Pbars cycle



Injector Accelerator Schedule 2024











# Finalize beam commissioning in AD and ELENA with pbars Continue MDs on Hminus cycle

> Optimization of AD injection line to recover the missing few % intensity:

Cannot be done with pulsing only during working hours

### Note: no pbars send if beam permit is not signed!

