

LINAC3 Availability Statistics 2024

Information I

These slides are a template to summarize availability of your machine in 2024. Please correct and complement the slides considering the following questions:

- What are the main events & challenges impacting availability this year?
 - Is this shown in the data, and does it match your expectations?
 - Is any crucial aspect not visible in the data that should be pointed out?
- What is the outlook for next year?
 - Are you expecting interventions over YETS that might improve availability?
 - Could certain circumstances lead to an availability degradation?

Information II

- There will be additional questions on each slide. Feel free to spread out comments over multiple slides as required
- **We only need reviews of 2024.** Previous years are already well covered (e.g. see the Special RAWG on Accelerator Availability 2023, linked)
<https://indico.cern.ch/event/1340975/>
- All LINAC3 faults this year can be found at:
https://aft.cern.ch/search?timePeriod=%257B%2522timePeriodType%2522%253A%2522fixed%2522%252C%2522startTime%2522%253A%252201012024000000%2522%252C%2522endTime%2522%253A%252201012025000000%2522%252D&accelerator=LINAC3&hadStates=BLOCKING_OP&excludedFaultStates=NON_BLOCKING_OP%252CUNDERSTOOD%252CSUSPENDED

Availability Schedule

Availability is counted over time periods as follows:

- L4, PSB, PS, SPS: starts once beam is required by a downstream machine
- L3, LEIR starts once beam is delivered to LHC
- LHC starts with beam commissioning
- ISOLDE, AD/ELENA, EAST, NORTH starts with respective physics period

Dedicated MDs and Technical Stops are excluded from availability monitoring.

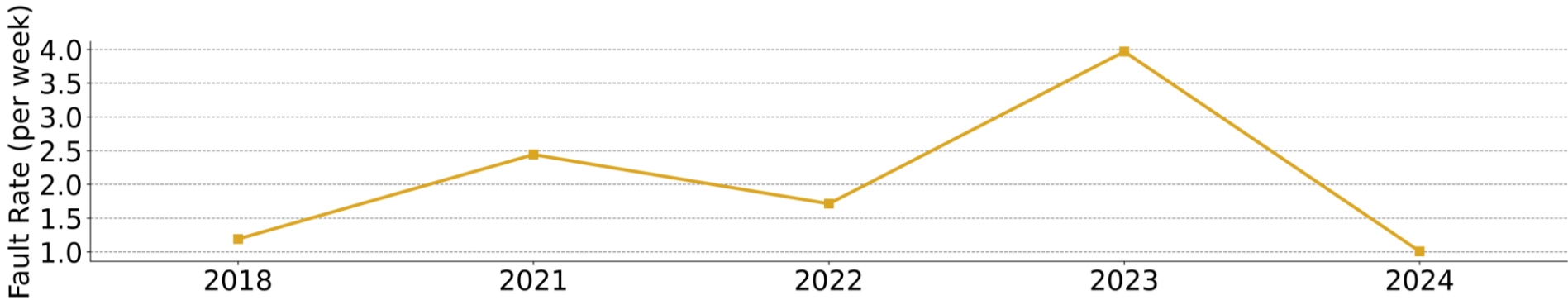
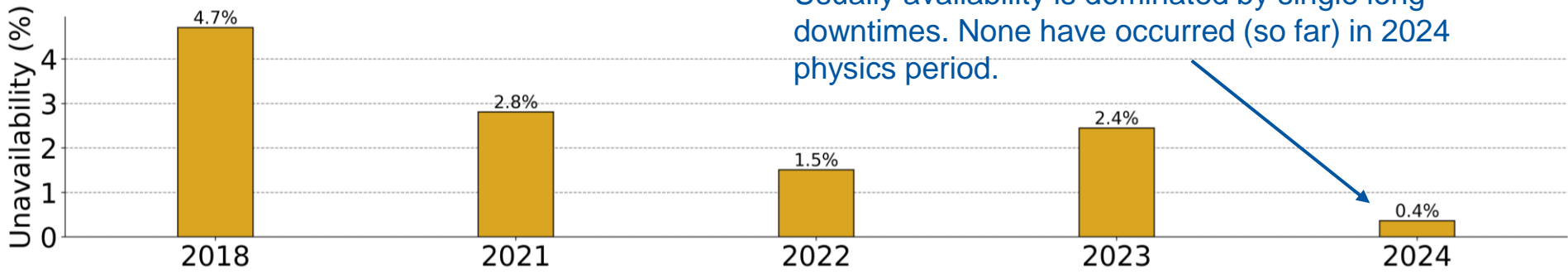
LINAC3 time periods are on the next page. [Should these times be wrong, please correct them and let us know](#)

LINAC3 Physics Periods

- ('04-06-2018 09:00:00', '18-06-2018 09:00:00'),
 - ('20-06-2018 09:00:00', '17-09-2018 09:00:00'),
 - ('19-09-2018 09:00:00', '10-12-2018 06:00:00'),
 - ('26-07-2021 09:00:00', '15-09-2021 14:00:00'),
 - ('16-09-2021 11:00:00', '16-11-2021 06:00:00'),
 - ('03-11-2022 09:00:00', '28-11-2022 06:00:00'),
 - ('11-09-2023 09:00:00', '12-10-2023 06:30:00'),
 - ('12-10-2023 15:30:00', '01-11-2023 08:00:00'),
 - ('04-11-2024 09:00:00', '02-12-2024 06:00:00')
- Only times that LHC gets ions

2024 in Context

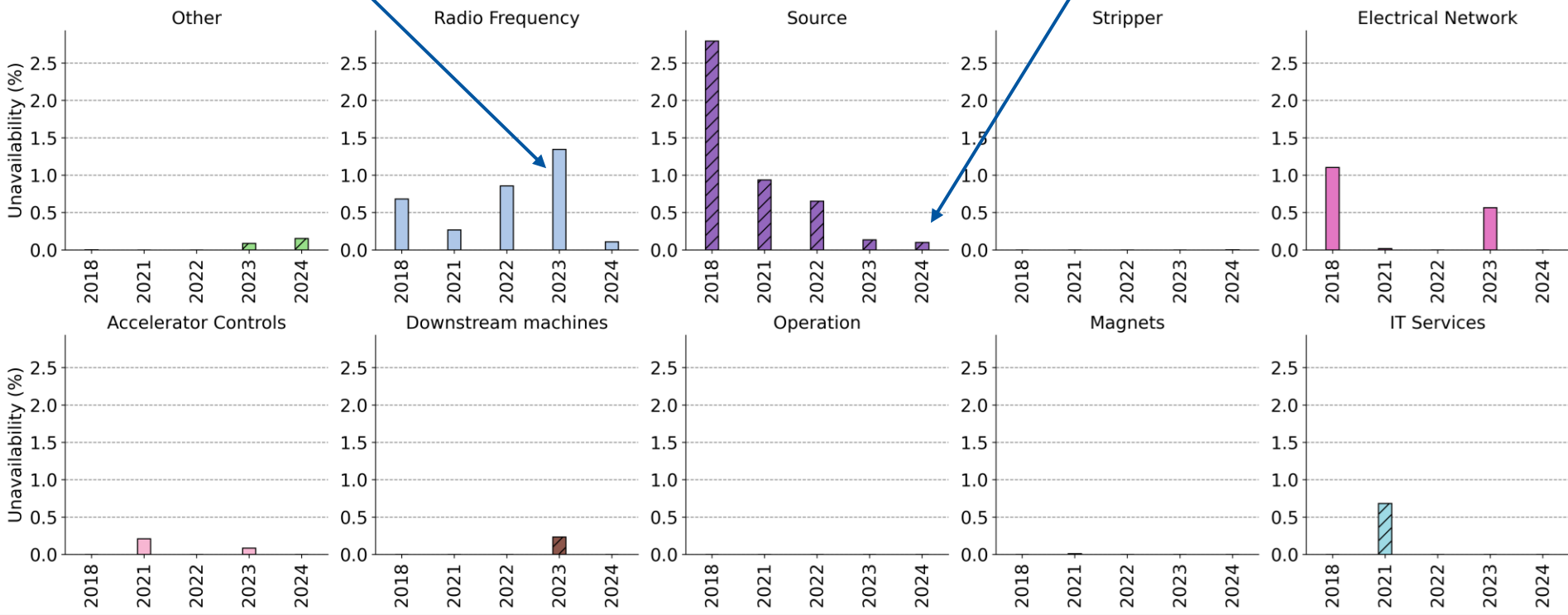
2024 Statistics based on only 3 weeks of operation. Usually availability is dominated by single long downtimes. None have occurred (so far) in 2024 physics period.



System Downtime

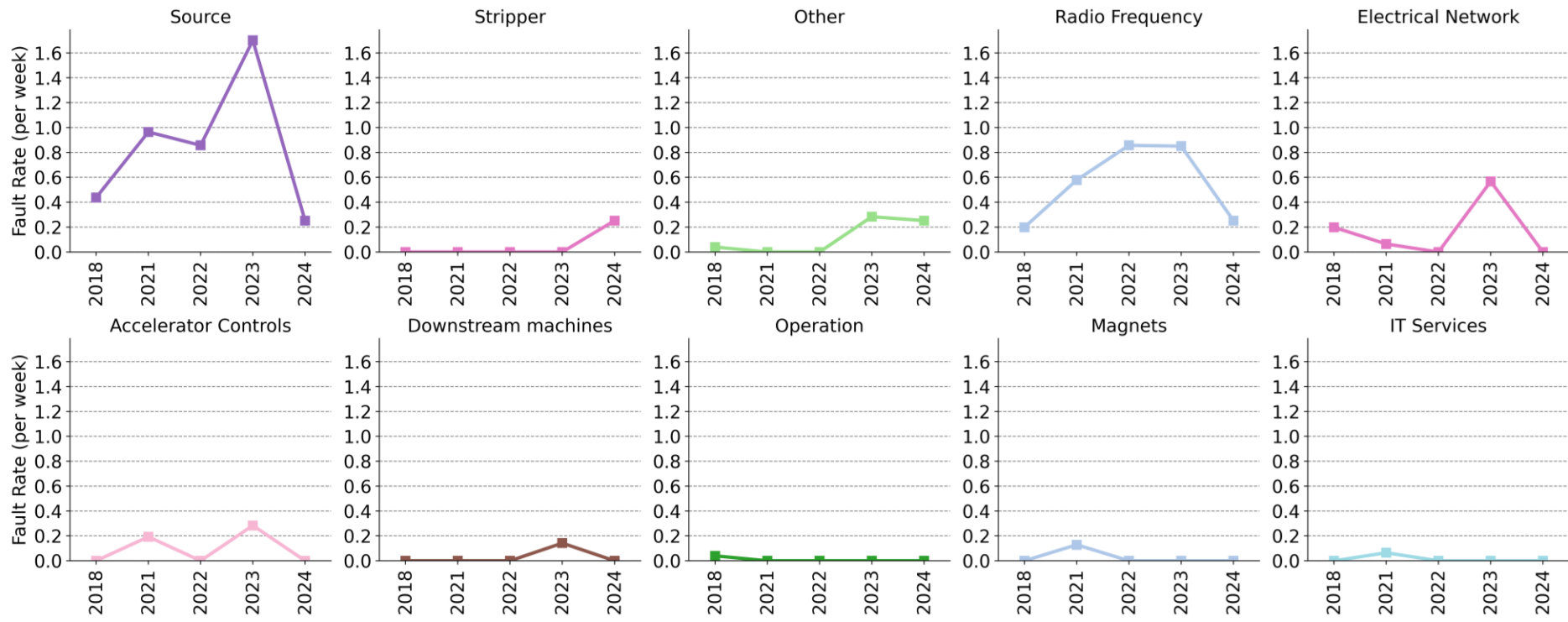
New RF amplifiers
2023 still exhibited some
teething problems.
Improved in 2024.

Source needed an
"unplanned" oven refill.
(update statistics?)



System Failure Rate

Very low number of faults in general

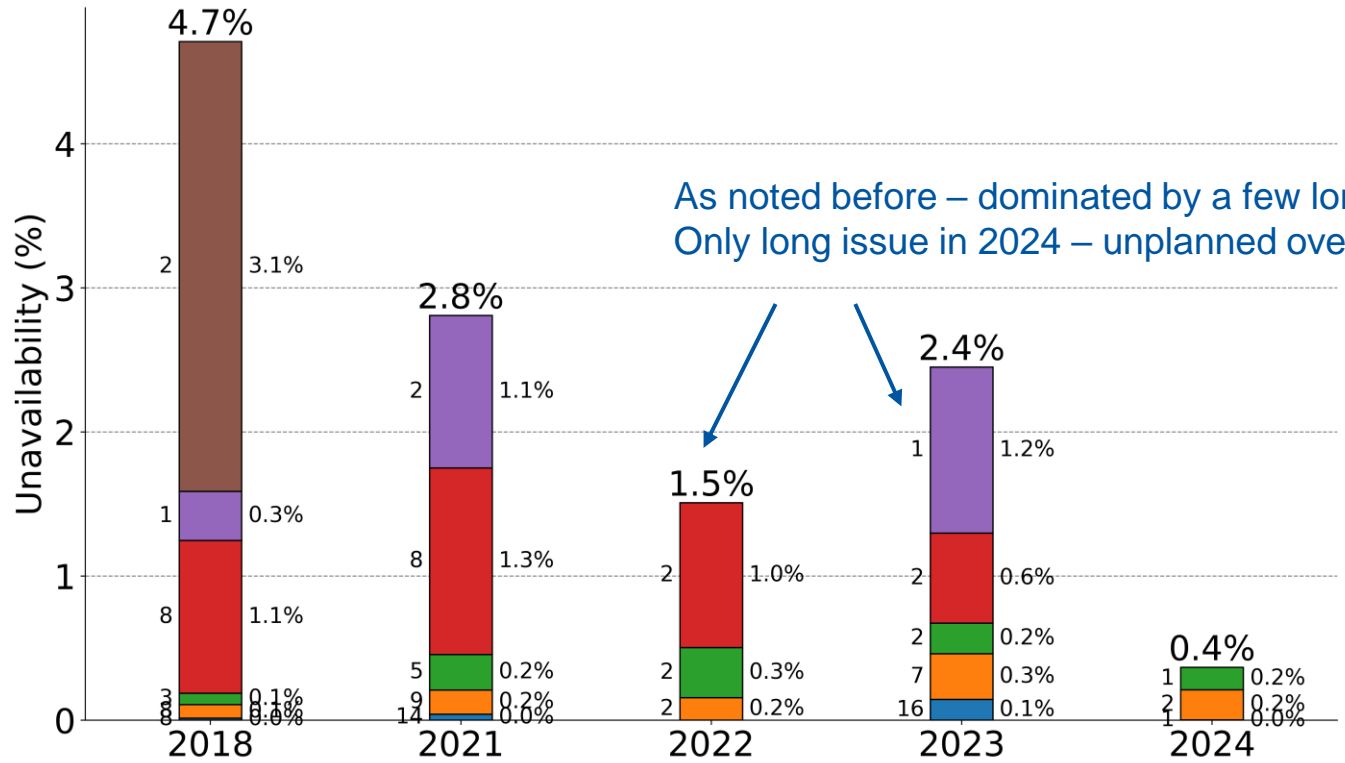


Unavailability by Duration

Do these trends match your expectations?
 Any positive trends worth remarking?
 Are any trends worrying?

(w/o injector complex)

LINAC3



As noted before – dominated by a few long faults.
 Only long issue in 2024 – unplanned oven refill

Summary & Conclusion

- Linac3 has been very reliable during the first three weeks of 2024 ion operation so far.
- Oven refill was necessary – 32 days without refill was scheduled. Oven1 ran for 28 days, but oven2 did not deliver any Pb. Will be followed up.
- Otherwise, no major faults so far (>4 hours)
- Compared to 2023:
 - Fewer RF faults, teething issues on the new amplifiers have been understood.
 - Source has been reliable in the physics period, but still has several concerns for spares that have very long lead times. Lack of spares did lead to long downtimes during the ion start up. A long-term strategy for the 14GHz generator for the source needs to be worked out.
- No major consolidation works foreseen in YETS24-25.
- 2025 will include two runs for physics (oxygen and lead).