Accelerator Update

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CLAS Collaboration Meeting

July 11, 2025

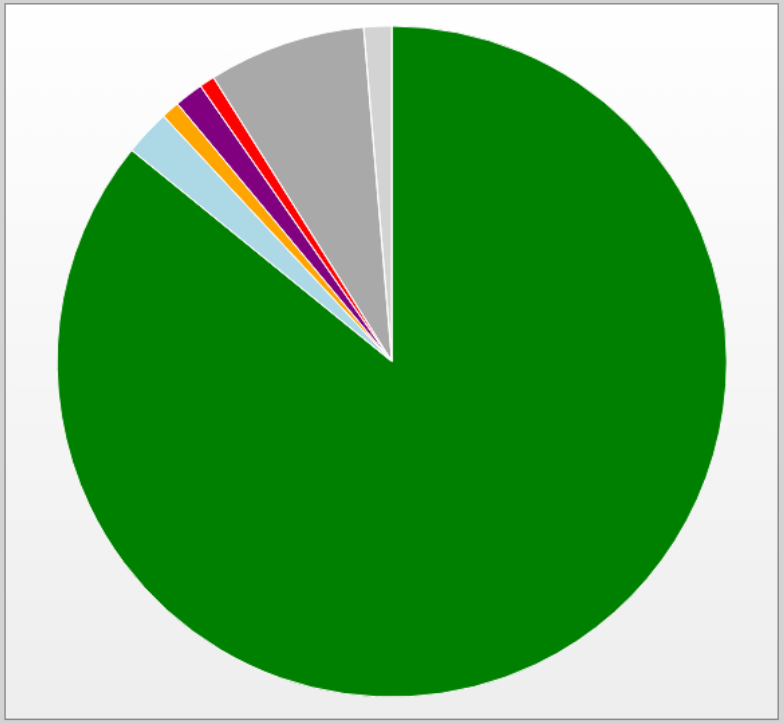
Overview

- A short sampling of status and upcoming plans
  - Beam Time summary
  - Some items observed and to be followed up
  - Maintenance period activities and schedule

Beam Accounting 02 April to 10 July

Accelerator Beam Time

April 2 - July 10, 2025 *



	CC Hrs	CC %	PD Sched. Hrs	PAC Sched. Hrs
Physics	2,039.6	(85.8%)	2,135.0	2,376.0
Studies	52.6	(2.2%)	62.0	0.0
SAM Restore	21.0	(0.9%)	9.0	0.0
ACC	32.9	(1.4%)	32.0	0.0
Internal Down	17.5	(0.7%)	-	-
Program Time:	2,163.6	(91.1%)	2,238.0	2,376.0
SAM	180.4	(7.6%)	146.0	0.0
Implicit Off	32.0	(1.3%)	0.0	0.0
Off Time:	212.4	(8.9%)	146.0	0.0

- Improvement is needed...
- Summary shows 85% of time dedicated to physics, but
- Weekly PD summaries show variously 40% to 70% ABU

Beam Quality

- Beam has been available at requested current and power
- Intermittent high halo levels, especially for Hall B
  - Recent halo rates have correlated with linac optics
  - High halo rates with errors in linac skew quads
  - Optimize this previously unrecognized influence?
- Tunnel radiation detectors are in use and being added
  - Detection of beam scraping can guide halo control
- Improved diagnostics in NorthEast Spreader?
  - Beam position within septum dipole strings
  - Enable beam size control in these “invisible” areas
  - Need to access this info for high pass NL beams

Upcoming and In-Progress Activities

- Add tunnel radiation detectors
- Cryomodule upgrades and reprocessing
  - Sequence and location
  - Helium and plasma processing
- Accelerator infrastructure modernization
  - Master Oscillator distribution upgrade Inj/NL
  - Injector chopper region refurbishing
  - VME crate upgrades
  - RF Separator power (SSA) maintenance/improvement
  - Magnet power supply upgrades (Trim Card 3)
- Pursue use of positron beams
  - Simulating positrons: foil degrader for injector beam

Beam Delivery and Diagnostics

- Halls A and C Fast FeedBack
  - System has been decommissioned for years
  - Being brought back into service for upcoming use
- Energy spread monitor
  - Revise/recommission synchrotron light interferometer
  - Measure Xrms in dispersively dominated region
- Gain access to beam position/size in spreader regions

Accelerator Maintenance

- Scheduled beam off Sept 3, 2025
- Physics resumes 25 January to early February 2026
  - Opinions/expectations differ
- Significant effort for cryomodules
  - New C100 to go (prospectively) into 1L26
  - 2L03 (possibly 2L02?) receives a C75
  - North Linac C100s will be plasma processed
  - Plasma process North Linac C100s
  - Plasma process C75s, possibly others, as time permits
  - Warm window. Gate valve replacements
  - Multiple thermal cycles
- Other systems mentioned earlier: magnets, MO line, etc