

Hall A/C Status

- Overall beam schedule
- Discuss Hypernuclear experiments
- Possible running scenario
- ERR outline

November 14, 2023 Hypernuclear meeting

Overall Beam schedule

- Beam started in beginning of Sept 2023 due to delay caused by safety shutdown. This caused a shift in the general run period scheduling back to the Sept – May schedule.
- Hall A schedule
 - Complete A_LL by Nov 29th 2023. Changeover to GEN-RP / K_LL experiments
 - Run GEN-RP/K_LL in April 2024.
 - Changeover to GEP for May 2024 to Oct 2024
 - Run GEP from Nov 2024 to April 2025
 - Start MOLLER installation May 2025 to Sept 2026. MOLLER runs 3 years until 2029.
- Hall C schedule
 - Complete NPS experiment by May 2024. Changeover to LAD experiment
 - Run LAD, pion CT and R-SIDIS from Sept 2024-May 2025
 - Run experiments using standard SHMS/HMS from Sept 2025-May 2026
 - Install hypernuclear setup June 2026 – Dec 2026.
 - Target construction and installation intertwined with needs of other halls.
 - Run hypernuclear experiments

Hypernuclear experiments

- E12-15-008 , *“An isospin dependence study of the Lambda-N interaction ...”*
 - Jeopardy approved by PAC51 for the original 28 days with A rating
 - Need to come back to the PAC52 for the requested 61 days need to run in Hall C.
- E12-20-013 , *“Studying Lambda interactions in nuclear matter with the 208Pb(e,e’K+)”*
 - Although not in Jeopardy need to present at PAC52 for Hall C running
 - 20days at 25uA .
- LOI12-23-011, *“High-resolution spectroscopy of light hypernuclei with the decay-pion spectroscopy”*
 - 14 PAC days. Need ENGE magnet and PS.
 - PAC comments:
 - “The LOI does not show the simulated spectrum for heavier targets (Al, Ca, and Pb), and the signal-to-noise ratio and the feasibility should be addressed. “
 - “ it is necessary to study/simulate how the Fermi motion and fission reaction kinematics affects the pion momentum distribution”
- LOI12-23-013, *“Study of charge symmetry breaking in p-shell hypernuclei”*
 - 21.5 PAC days.
 - PAC comment: “A full proposal should include a theoretical discussion of the Λ binding energy, of expected CSB effects for the p-shell hypernuclei”
- LOI12-23-016, *“Study of a triaxially deformed nucleus using a Lambda particle as a probe”*
 - 28 PAC days
 - Pac comment: “More theoretical efforts are required to connect the measured spectrum to the deformation of the core nucleus.”

Possible running scenario

- Experiment PAC days.

E12-15-008	E12-20-013	L12-23-011	L12-23-013	L12-23-016	Total PAC days
61	20 (40?)	14	21.5	28	144.5 (165.5)

- One possible scenario
 - Installation from June 2026 to Dec 2026.
 - Run Jan 2027 to May 2027. Roughly 75 PAC days (5 months running)
 - Down June, July and August
 - Run Sept 2027- March 2028. Roughly 90 PAC days (6 months running)
 - April 2028 start changeover to next experiments.

ERR

- Timing of ERR. My suggestion is best after PAC52, since then will have set program of experiments approved by the PAC.
- Typical charge for ERR
 - Experiment
 - Installation schedule
 - Preliminary commissioning and run plans. DAQ and Tape storage data needs.
 - System ownership and responsibility
 - Preliminary data analysis and publication plan
 - Radiation budget. Do we need more detailed radiation study for activation near beamline?
 - Equipment
 - Existing equipment requirements finalized
 - New equipment design and requirements
 - Timeline for equipment fabrication & installation
 - Manuals for new equipment available
 - UL or equivalent certification for new equipment available
 - Manpower for equipment, installation, running experiment
 - Documentation
 - Preliminary OSPs for new
 - Flammable gas analysis if applicable
 - Preliminary: RSAD, ESAD, COO, ERG, Operations Manual

Summary

- Goals of meeting
 - Need to confirm the general layout of beam line, magnets and detectors
 - Plan for proposals from PAC52
 - E12-15-008 needs PAC approval for 61 days.
 - Suggest E12-20-013 present at PAC52 since in Hall C and get higher rating.
 - Three letters of intent
 - Timeline and organization of the ERR.