

For PAC48 Submission

[<https://misportal.jlab.org/pacProposals/proposals/new>]

June 1st, 2020
FireFox is favorite

New Proposal

Proposal Cover Sheet (PAC 48)

Proposal Type: [New Proposal](#)

Basic Information

Physics Category: [The Hadron Spectra as probes of QCD](#)

Title: [Strange Hadron Spectroscopy with Secondary KL Beam in Hall D](#)

Days Requested for Approval: [200](#)

Experiment Halls: [D](#)

Approved, Conditionally Approved, and/or Deferred Experiment(s) or proposals:

[Deferred Experiment: PR12-17-001](#)

[Deferred Experiment: PR12-18-002](#)

[Recommendation: C2-19-001](#)

Collaboration-Approved Proposals: If you will be running in parallel with an approved experiment, please indicate the experiment number:

[Our experiment cannot run in parallel with accepted experiments by PAC](#)

Author List: [<uploaded>](#)

Contact Us

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Major Installations

Equipment:

- [+ GlueX](#)
- [+ New Compact Photon Source will be located downstream of the tagger magnet](#)
- [+ New Be-target Assembly will be located at the beginning of the collimator cave](#)
- [+ New Flux Monitor will be located downstream the Pair Spectrometer magnet and upstream Pair Spectrometer shielding wall](#)
- [+ Replace a cryogenic target cell](#)

Support Structures:

- [+ Add two concrete walls inside the collimator cave](#)
- [+ Add new vacuum beam pipe between Be and cryogenic targets](#)
- [- Remove two collimators from the collimator cave](#)
- [- Remove detectors of the Pair Spectrometer](#)
- [+ Add support structure for the Be target assembly](#)
- [+ Add support structure for the Flux Monitor](#)
- [+ Add support structure for the Compact Photon Source](#)
- [+ Add the pulse picking system and the laser amplifier for a beamline delivery system](#)

Data Acquisition/Reduction:

Support Structures: [GlueX](#)
Software: [GlueX](#)

Major Equipment:

Magnets: [GlueX & CPS & Flux Monitor](#)
Power Supplies: [GlueX & CPS & Flux Monitor](#)
Detectors: [GlueX & Flux Monitor](#)
Electronics: [GlueX & Flux Monitor](#)
Computer Hardware: [GlueX](#)

Other Resources:

- + [Add cooling system for the Compact Photon Source](#)
- + [Add cooling system for the Flux Monitor](#)
- + [Add cooling system for the Be-target Assembly](#)
- + [Add motion system for the Be-Target](#)

Beam Requirement List:

Beam Energy (MeV)	Mean Beam Current (μA)	Polarization and Other Requirements
12000	5	64 ns repetition
Est Beam-On Time (hours)	Target Materials	& Thickness (mg/cm^2)
4800	Liquid Deuterium	& 6496
	Liquid Hydrogen	& 2834
	Beryllium	& 73735
	Tungsten photon beam absorber	& 193000
	Copper radiator (10% r.l.)	& 1281

Hazard Identification Checklist:

Cryogenics:

Beamline Magnets: [N/A](#)
Analysis Magnets: [Liquid nitrogen, liquid helium](#)
Target Magnets: [N/A](#)
Type: [Liquid hydrogen, liquid deuterium](#)
Flow Rate: [N/A](#)
Capacity: [N/A](#)

Electrical Equipment:

Cryo/Electrical Devices:

Capacitor Banks:
High Voltage: [Yes](#)

Exposed Equipment:

Radioactive materials: [N/A](#)

Pressure Valves:

Inside Diameter: [N/A](#)
Operating Pressure: [Existing pressure relief valves on the cryogenic target system](#)
Window Material: [N/A](#)
Window Thickness: [N/A](#)
Special Target Materials: [Deuterium](#)

Flammable:

Type: [Hydrogen & deuterium](#)
Flow Rate: [N/A](#)
Capacity: [N/A](#)

Drift Container:
 Type: N/A
 Flow Rate:
 Capacity:
 Other Target Materials:
 Beryllium
 Liquid Hydrogen
 Tungsten
 Copper

Vacuum Vessels:
 Inside Diameter
 Operating Pressure: Existing target vacuum vessels
 Window Material:
 Window Thickness:

Radioactive Sources:
 Permanent Installment
 Temporary Use
 Type: N/A
 Strength

Larger Mechanical structure:
 Lifting Devices
 Motion Controllers
 Scaffolding
 Elevated Platforms

Lasers:
 Type: N/A
 Wattage
 Class

Hazardous Materials: N/A

General:
 Base Equipment: Yes
 Temp. Mod. To Base Equip.: "Coll. cave" - all the equipment but the perm. magnet must be removed (not the collimators only)
 Perm. Mod. to Base Equip.: the CPS would stay there permanently (too hot to take apart)
 Major New Apparatus: Yes
 Other General: Temp. Mod. To Base Equip.: Increase the cryogenic target cell volume
 Temp. Mod. To Base Equip.: low bunch repetition

Computing Requirement List:

Silo/Mass Storage (Tape): 700 TB
 Amount of Simulated Data Expected: 140 TB
 Amount of Raw Data Expected (TB): 230 TB
 Amount of Processed Data Expected (TB): 360 TB
 Online Storage Disk Required (TB): 50 TB
 Imported Data Expected from Offsite Institution: 10 TB
 Exported Data Expected to Offsite Locations: 500 TB

Computing:

Simulation Requirements (SPEC CINT 2000hrs): [5.3Mcore-hrs \(2016 farm node\)](#)

Production (Replay, Analysis, Cooking) Requirements (SPEC CINT 2000hrs):
[23M core-hrs \(2016 farm node\)](#)

Other Requirements:

Please add any additional information that will be useful for JLab's IT Division regarding unique configurations or that may require additional resources and/or coordination. Please indicate if possible what fraction of these resources will be provided by collaborating institutions and how much is expected to be provided by JLab. [N/A](#)

Assumed Resource Requirements

Use this section to provide any information regarding the assumed requirements for the resources needed.

[Assume standard GlueX computing workflow. Details of numbers in the requirement list calculated via GlueX computing model. See details here:](#)

https://github.com/JeffersonLab/hd_utilities/blob/master/comp_mod/KLong_proposal2019.xml

There are several supplemental files:

- 1) [Cover Letter](#)
- 2) [New Equipment](#)