Jefferson Lab PAC38

Proposal Cover Sheet

This document must be received by close of business Friday,

July 1, 2011 at:

Jefferson Lab
User Liaison
Mail Stop 12H5
12000 Jefferson Ave.
Newport News, VA
23606

Experimental ~~Hall~~: INJECTOR

Days Requested for Approval: 14

☒ Proposal Title:

POLARIZED ELECTRONS FOR POLARIZED POSITRONS : A proof-of-principle experiment

Proposal Physics Goals

Indicate any experiments that have physics goals similar to those in your proposal.

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

I AM NOT AWARE OF ANY OTHER.
THIS IS AN ACCELERATOR EXPERIMENT AT INJECTOR

Contact Person

Name: JOSEPH GRAMES
Institution: JLAB
Address: 12050 Jefferson Ave.
Address:
City, State, ZIP/Country: Newport News, VA 23606
Phone/Fax: 757-269-7097
E-Mail: grames@jlab.org

Spokespersons:

1. Joseph Grames
2. Eric Voutier
3.
4.
5.
6.

Jefferson Lab Use Only

Receipt Date: _____

By: _____

BEAM REQUIREMENTS LIST

JLab Proposal No.: _____ Date: July 5, 2011

Hall: INJECTOR Anticipated Run Date: May, 2012 PAC Approved Days: _____

Spokesperson: Joseph Grames
Hall Liaison: n/a - CEBAF Injector
Phone: 757-269-7097
E-mail: grames@jlab.org

List all combinations of anticipated targets and beam conditions required to execute the experiment. (This list will form the primary basis for the Radiation Safety Assesment Document (RSAD) calculations that must be performed for each experiment.)

Condition No.	Beam Energy (MeV)	Mean Beam Current (μA)	Polarization and Other Special Requirements (e.g., time structure)	Target Material (use multiple rows for complex targets — e.g., w/windows)	Material Thickness (mg/cm^2)	Est. Beam-On Time for Cond. No. (hours)
1	6.3	1	polarized	tungsten	1925	105
2	6.3	5	polarized	gold	19.3	10
3	6.3	0.01	polarized	tungsten	3850	85
4	6.3	4	polarized	tungsten	3369	100
5	6.3	4	polarized	tungsten	1925	36

The beam energies, E_{Beam}, available are: $E_{Beam} = N \times E_{Linac}$ where N = 1, 2, 3, 4, or 5. E_{Linac} = 800 MeV, i.e., available E_{Beam} are 800, 1600, 2400, 3200, and 4000 MeV. Other energies should be arranged with the Hall Leader before listing.

HAZARD IDENTIFICATION CHECKLIST

JLab Proposal No.: _____ Date : July 5, 2011

(For JLab U/I Liaison Office use only.)

Check all items for which there is an anticipated need.

Cryogenics
- ☐ beamline magnets
- ☐ analysis magnets
- ☐ target

type: _____
flow rate: _____
capacity: _____

Electrical Equipment
- ☐ cryo/electrical devices
- ☐ capacitor banks
- ☑ high voltage
- ☐ exposed equipment

Radioactive/Hazardous Materials
List any radioactive or hazadorous/ toxic materials planned for use:

_____
_____
_____
_____

Pressure Vessels
- ☐ inside diameter
- ☐ operating pressure
- ☐ window material
- ☐ window thickness

Flammable Gas or Liquids
type: _____
flow rate: _____
capacity: _____

Other Target Materials
- ☐ Beryllium (Be)
- ☐ Lithium (Li)
- ☐ Mercury (Hg)
- ☐ Lead (Pb)
- ☑ Tungsten (W)
- ☐ Uranium (U)
- ☐ Other (list below)

_____
_____

Special Target Materials
- ☐ * Helium (^{3}He)
- ☐ Deuterium

Drift Chambers
type: _____
flow rate: _____
capacity: _____

Vacuum Vessels
- ☐ inside diameter
- ☐ operating pressure
- ☐ window material
- ☑ window thickness

Radioactive Sources
- ☐ permanent installation
- ☐ temporary use

type: _____
strength: _____

Large Mech. Structure/System
- ☐ lifting devices
- ☐ motion controllers
- ☐ scaffolding or
- ☐ elevated platforms

Lasers
type: _____
wattage: _____
class: _____

Installation:
- ☐ permanent
- ☐ temporary

Use:
- ☐ calibration
- ☐ alignment

Hazardous Materials
- ☐ cyanide plating materials
- ☐ scintillation oil (from)
- ☐ PCBs
- ☐ methane
- ☐ TMAE
- ☐ TEA
- ☐ photographic developers
- ☐ other (list below)

_____
_____

General

Experiment Class:
- ☐ Base Equipment
- ☑ Temp. Mod. to Base Equip.
- ☐ Permanent Mod. to Base Equipment
- ☐ Major New Apparatus

Other: _____
_____

LAB RESOURCES LIST

JLab Proposal No.: _____ Date July 5, 2011

(For JLab ULO use only.)

List below significant resources — both equipment and human — that you are requesting from Jefferson Lab in support of mounting and executing the proposed experiment. Do not include items that will be routinely supplied to all running experiments such as the base equipment for the hall and technical support for routine operation, installation, and maintenance.

Major Installations *(either your equip. or new equip. requested from JLab)*

A new electron beam line and the experimental apparatus will be installed at CEBAF injector during the 6MSD (May-Oct, 2011).

New Support Structures: Beam line support structures already exist or are being fabricated. A temporary walkway has been already been fabricated.

Data Acquisition/Reduction

Computing Resources: See attached computing resource document for storage and simulation requirements.

New Software: Mew magnet control software is being developed by CEBAF operations.

Major Equipment

Magnets: Includes (4) new magnets already on site and available.

Power Supplies: Includes (4) new magnet power supplies on site and available.

Targets: Include (1) existing target ladder plus new tungsten foil targets.

Detectors: Includes (1) CsI calorimeter, (1) NaI counter, (1) fiber array on site

Electronics: Includes 1 rack of electronics already on site

Computer Hardware: Includes (1) computer already on site and running

Other:

Other:

Date: _____
Exp. #: _____

Offline Computing Requirements

Proposal Title:
Polarized Electrons for Polarized Positrons (PEPPo): A proof-of-principle experiment

Spokesperson: Joe Grames & Eric Voutier Experimental Hall: INJECTOR

Data:

Silo/Mass Storage (Tape): 1

Amount of Simulated Data Expected (TB): 1

Amount of Raw Data Expected (TB): 1

Amount of Processed Data Expected (TB): 0.5

Online Storage (Disk) Required (TB): 0.5

Imported Data Expected from Offsite Locations (TB): 1

Exported Data Expected to Offsite Locations (TB): 1

Computing:

Simulation Requirements (SPEC CINT2000 hrs): 1000

Production (Replay, Analysis, Cooking) Requirements (SPEC CINT2000 hrs): 1000

Other Requirements:

Please add any additional information that will be useful information for JLab's Information Technology group 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.

The raw data will be collected at the accelerator. The total amount of raw and/or processed data ported to the computer center for processing may therefore be less than specified.