Jefferson Lab
Thomas Jefferson National Accelerator Facility

# Jefferson Lab PAC 44
## Proposal Cover Sheet

**Proposal Type:** Run Group Proposal
**Proposal Title:** Measurement of Deep Exclusive pi- Production using a Transversely Polarized 3He Target and the SoLID Spectrometer
**Experiment Hall:** A
**Days Requested for Approval:** 48

### Proposal Physic Goals:
**Indicate any Experiments that have physics goals similar to those in your proposal. Approved Conditionally approved, and/or Deferred Experiment(s) or proposals.**

N/A

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

E12-10-006

## Key Experimental Parameters

### List Beam Energies and Beam Days: (e.g. 30 Days at 11 GeV, 20 Days at 8 GeV)

48 days at 11 GeV, plus 5 days target overhead and 3 days reference cell runs and checkout

### List Range of Beam Currents: (e.g. 10-60 mA)

15 muA

### Indicate Major Apparatus: (e.g. CLAS12 & RICH, GLUEX, SHMS, HMS, SBS, SOLID)

SOLID

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

E12-10-006

## Contact Person:


| | |
|---|---|
| **Name:** | Garth Huber |
| **Institution:** | University of Regina |
| **Address:** | 3737 Wascana Parkway |
| **City, State, ZIP/Country:** | Regina, SK  S4S-0A2/Canada |
| **Phone:** | 306-585-4240 |
| **Fax:** | 306-585-5659 |
| **Email:** | huberg@uregina.ca |


## Spokesperson:

1. Zhihong Ye
2. Zafar Ahmed

**Receipt Date:** No Data

# Lab Resources List

**JLab Proposal No. :** E12-10-006B
**Date:** No Data

**List below significant resources - both in equipment and human - that you are requesting from Jefferson Lab in support of mounting and executing the proposed experiment. Do not include item 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**

SoLID Spectrometer and Transversely Polarized 3He Target, as for E12-10-006

### New Support Structures:

N/A

## Data Aquisition/ Reduction

### New Support Structures:

N/A

### New Software:

As for E12-10-006

## Major Equipment:

### Magnets:

SoLID Spectrometer and Transversely Polarized 3He Target, as for E12-10-006

### Power Supplies:

SoLID Spectrometer and Transversely Polarized 3He Target, as for E12-10-006

### Targets:

Transversely Polarized 3He Target, as for E12-10-006

### Detectors:

SoLID Spectrometer, as for E12-10-006

### Electronics:

SoLID Spectrometer and Transversely Polarized 3He Target, as for E12-10-006

### Computer Hardware

As for E12-10-006

### Other:

N/A

## Beam Requirements List

**JLab Proposal No:** E12-10-006B **Hall:** A **Date:** No Data

**Anticipated Run Date:** No Data **PAC Approved Days:** No Data

**Contact Person:** Garth Huber **Phone:** 306-585-4240

**Email:** huberg@uregina.ca **Hall Liaison:** J.-P. Chen

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

| Beam Energy(MeV) | Mean Beam Current(μA) | Polarization and Other Requirements | Est Beam-On Time(hours) | Target Materials | Target Thickness(mg/cm²) |
|---|---|---|---|---|---|
| 11000 | 15 | N/A | 1152 | 3He | 50 |
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**The beam energies, EBeam, available are: EBeam = N x ELinac where N = 1, 2, 3, 4, or 5. ELinac = 800 MeV, i.e, available EBeam 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:** E12-10-006B **Date:** No Data

**Check all items for which there is an anticipated need.**

### Cryogenics
- [x] Beamline Magnets
- [x] Analysis Magnets
- [x] Target Magnets

Type: SoLID Spectrometer and Transversely Polarized 3He Target, as for E12-10-006
Flow Rate: _____
Capacity: _____

### Electrical Equipment
- [ ] Cryo/Electrical Devices
- [ ] Capacitor Banks
- [ ] High Voltage
- [ ] Exposed Equipment

### Radioactive Materials
List radioactive or hazardous/toxic materials planned for use:
_____

### Pressure Vessels
Inside Diameter: _____
Operating Pressure: _____
Window Material: _____
Window Thickness: _____

### Flammable
Type: Standard gases for SoLID GEM detectors
Flow Rate: _____
Capacity: _____

### Other Target Materials
- [ ] Beryllium
- [ ] Lithium
- [ ] Mercury
- [ ] Lead
- [ ] Tungsten
- [ ] Uranium
- [x] Helium

Other Target Material:
Helim-3

### Special Target Materials
- [x] Helium
- [ ] Deuterium

### Drift Container
Type: _____
Flow Rate: _____
Capacity: _____

### Vacuum Vessels
Inside Diameter: _____
Operating Pressure: _____
Window Material: _____
Window Thickness: _____

### Radioactive Sources
- [ ] Permanent Installment
- [ ] Temporary Use

Type: _____
Strength: _____

### Large Mech. Structures
- [ ] Lifting Devices
- [ ] Motion Controllers
- [ ] Scaffolding
- [ ] Elevated Platforms

### Lasers
Type: Polarized 3He Target, as per E12-10-006
Wattage: _____
Class: _____
- [ ] Permanent
- [x] Temporary
- [ ] Calibration
- [ ] Alignment

### Hazardous Materials
- [ ] Cyanide Plating Materials
- [ ] Scintillation oil
- [ ] PCBs
- [ ] Methane
- [ ] TMAE
- [ ] TEA
- [ ] Photographic Developers

Other Hazardous Materials:
_____

### General
- [x] Base Equipment
- [x] Temp. Mod. To Base Equip.
- [ ] Perm. Mod. to Base Equip.
- [ ] Major New Apparatus

Other General:
SoLID Spectrometer and Transversely Polarized 3He Target, as for E12-10-006

## Computing Requirements List

**Proposal Title:** Measurement of Deep Exclusive pi- Production using a Transversely Polarized 3He Target and the SoLID Spectrometer
**Contact Person:** Garth Huber
**Experiment Hall:** A

## Data

**Silo/Mass Storage (Tape):** No additional requirements beyond E12-10-006

**Amount of Simulated Data Expected (TB):** 1

**Amount of Raw Data Expected (TB):** No additional requirements beyond E12-10-006

**Amount of Processed Data Expected:** 5

**Online Storage (Disk) Required (TB):** 5

**Imported Data Expected from Offsite Institutions:** N/A

**Exported Data Expected to Offsite Locations:** 1

## Computing

**Simulation Requirements (SPEC CINT2000 hrs):** 10000

**Production (Replay, Analysis, Cooking) Requirements (SPEC CINT2000 hrs):** 10000

### Other Requirements:

**Please add any additional information that will be useful 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.**

N/A

### Assumed Resource Requirements:

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

N/A