Jefferson Lab
Thomas Jefferson National Accelerator Facility

Jefferson Lab PAC 44
Proposal Cover Sheet

Proposal Type: Letter Of Intent
Proposal Title: First Measurement of the e - 3He Parity Violating Deep Inelastic Scattering Asymmetry Using an Upgraded Polarized 3He Target
Experiment Hall: A
Days Requested for Approval: 180

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.

E08-011 (completed)

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

N/A

Key Experimental Parameters

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

180 days at 11 GeV for production data taking

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

60 microAmp

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

SOLID, high-density polarized 3He target

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

N/A

Contact Person:

Name:	Xiaochao Zheng
Institution:	University of Virginia
Address:	382 McCormick Rd
City, State, ZIP/Country:	Charlottesville
Phone:	N/A
Fax:	N/A
Email:	xiaochao@jlab.org

Spokesperson:

1. Yuxiang Zhao
2. Gordon Cates

Receipt Date: No Data

Lab Resources List

JLab Proposal No. : LOI12-16-007
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 with SIDIS configuration, High density polarized 3He target

New Support Structures:

SOLID-related support structure; Polarized 3He target related support structure

Data Aquisition/ Reduction

New Support Structures:

DAQ associated with SOLID

New Software:

Software associated with SOLID

Major Equipment:

Magnets:

SOLID

Power Supplies:

SOLID

Targets:

Polarized 3He target with increased density as proposed in the Letter

Detectors:

SOLID SIDIS configuration

Electronics:

SOLID-related electronics

Computer Hardware

SOLID SIDIS configuration - related computer hardware

Other:

N/A

Beam Requirements List

JLab Proposal No: LOI12-16-007 **Hall:** A **Date:** No Data

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

Contact Person: Xiaochao Zheng **Phone:** N/A

Email: xiaochao@jlab.org **Hall Liaison:** Jianping Chen (jpchen)

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	60	null transverse polarization	4320	3He	1607

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: LOI12-16-007 **Date:** No Data

Check all items for which there is an anticipated need.

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

Type: _____
Flow Rate: _____
Capacity: _____

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

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

Pressure Vessels
- [x] Inside Diameter
- [x] Operating Pressure
- [x] Window Material
- [x] Window Thickness

Flammable
Type: _____
Flow Rate: _____
Capacity: _____

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

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

Other Target Material:
_____

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

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: 1064nm
Wattage: 100-200
Class: IV
- [ ] Permanent
- [x] Temporary
- [ ] Calibration
- [x] Alignment

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

Other Hazardous Materials:
_____

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

Other General:
_____

Computing Requirements List

Proposal Title: First Measurement of the e - 3He Parity Violating Deep Inelastic Scattering Asymmetry Using an Upgraded Polarized 3He Target
Contact Person: Xiaochao Zheng
Experiment Hall: A

Data

Silo/Mass Storage (Tape): 1000TB

Amount of Simulated Data Expected (TB): 20TB

Amount of Raw Data Expected (TB): 20TB

Amount of Processed Data Expected: 5TB

Online Storage (Disk) Required (TB): 20TB

Imported Data Expected from Offsite Institutions: N/A

Exported Data Expected to Offsite Locations: N/A

Computing

Simulation Requirements (SPEC CINT2000 hrs): 4000 hours

Production (Replay, Analysis, Cooking) Requirements (SPEC CINT2000 hrs): 4000 hours

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