Jefferson Lab PAC26
Proposal Cover Sheet

This document must be received by close of business Monday,

May 24, 2004 at:

Jefferson Lab
User/International Liaison
Mail Stop 12B
12000 Jefferson Ave.
Newport News, VA
23606

Experimental Hall: C

Days Requested for Approval: 23

❒ **Proposal Title:**
Measurement of GEp/GMp using elastic polarized p(polarized e e'p) up to Q^2=5.6(GeV/c)^2

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:

PR-01-105, E-01-001, PR-04-014

Contact Person

Name: Xiaochao Zheng
Institution: Jefferson Lab/Argonne National Laboratory
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Address: JLab
City, State, ZIP/Country:
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Jefferson Lab Use Only

Receipt Date:_____

By:_____

LAB RESOURCES LIST

JLab Proposal No.: _____ Date 5/24/2004

(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)*

Polarized target
Big Electron Telescope Array (BETA)
Scintillation counter 3-layer wall

New Support Structures:

BigCal vertically adjustable stand
BETA Cherenkov+Lucite Hodoscope stand
Scintillator counter stand

Data Acquisition/Reduction

Computing Resources:

New Software:

Major Equipment

Magnets:

Power Supplies:

Targets: U. of Virginia polarized target

Detectors: BETA
U. of Virginia scintillation counter

Electronics:

Computer Hardware:

Other:

Other:

- Target Beam Position Monitor (SEM) used in E93-026 and E-01-006
- Hall C's BE and BZ1 chicane magnets for upstream beam line
- He bag with matching beam snout for downstream beam line

BEAM REQUIREMENTS LIST

JLab Proposal No.: _____ Date: 5/24/2004

Hall: C Anticipated Run Date: 2006 PAC Approved Days: 23

Spokesperson: Xiaochao Zheng Hall Liaison: Mark Jones
Phone: 757-269-5013
E-mail: xiaochao@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	5552	0.085-0.1	80% longitudinal	H	275	120
				15N	1375	
				He	320	
				Al	202	
				Cu	132	
2	5552	0.085-0.1	80%	Same as 1		254
3	5552	0.06-0.12	80%	Same as 1		32
4	5552	0.2		C	1553	12
5	5552	0.1-0.2		C (commissioning)	1553	32
6	5552	0.2		He	580	6
7	5552	0.1	80%	Fe (Moller)	3	13

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 : 5/24/2004

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

Check all items for which there is an anticipated need.

Cryogenics

- [ ] beamline magnets
- [ ] analysis magnets
- [x] target
  - type: Polarized
  - flow rate: 3 l/h LHe
  - capacity: 60 l

Electrical Equipment

- [ ] cryo/electrical devices
- [ ] capacitor banks
- [ ] high voltage
- [ ] exposed equipment

Radioactive/Hazardous Materials

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

Target: ammonia (15NH3) - two target cells, ~ 10 g each

Pressure Vessels

- _____ inside diameter
- _____ operating pressure
- _____ window material
- _____ window thickness

Flammable Gas or Liquids

- type: _____
- flow rate: _____
- capacity: _____

Drift Chambers

- type: _____
- flow rate: _____
- capacity: _____

Other Target Materials

- [ ] Beryllium (Be)
- [ ] Lithium (Li)
- [ ] Mercury (Hg)
- [ ] Lead (Pb)
- [ ] Tungsten (W)
- [ ] Uranium (U)
- [ ] * Helium (^{3}He)
- [ ] Other (list below)

* U/I Liaison Office to notify RADCON

Vacuum Vessels

- 106 cm inside diameter
- 1E-6 torr operating pressure
- Al window material
- .008 inch window thickness

Radioactive Sources

- [ ] permanent installation
- [ ] temporary use
- type: _____
- strength: _____

Large Mech. Structure/System

- [ ] lifting devices
- [ ] motion controllers
- [ ] scaffolding or
- [x] elevated platforms

Lasers

- type: Nitrogen
- wattage: < 10 W
- class: IV

Installation:

- [ ] permanent
- [x] temporary

Use:

- [x] calibration
- [ ] alignment

Hazardous Materials

- [ ] cyanide plating materials
- [ ] scintillation oil (from)
- [ ] PCBs
- [ ] methane
- [ ] TMAE
- [ ] TEA
- [ ] photographic developers
- [x] other (list below)

Ammonia: ~ 20g in target
200 g in Hall storage

General

Experiment Class:

- [ ] Base Equipment
- [ ] Temp. Mod. to Base Equip.
- [ ] Permanent Mod. to Base Equipment
- [x] Major New Apparatus

Other:

Computing Requirements List

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Spokesperson: Xiaochao Zheng **Experimental Hall:** C

Raw Data Expected

Total: 2 TB **Per Year (long duration experiments only):** _____

Simulation Compute Power (SPECint95 hours) Required: None

On-Line Disk Storage Required: 200 GB

Imported Data Amount from Outside Institutions: _____

Exported Data Amount to Outside Institutions:w 2 TB

Expected Mechanism for Imported/Exported Data: Magnetic tape / network data transfers

Special Requirements

For example, special configuration of data acquisition systems) that may require resources and/or coordination with JLab's Computer Center. 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.

Submit