



**Jefferson Lab PAC 40
Proposal Cover Sheet**

Experimental Hall:	D
Days Requested for Approval:	25

This document must be received by close of business Monday, May 6, 2013 at:

Jefferson Lab
Mail Stop 12B
12000 Jefferson Ave.
Newport News, Va
23606

Proposal Title:

Measuring the Charged Pion Polarizability in the $\gamma \gamma \rightarrow \pi^+ \pi^-$ Reaction

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.

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

Key Experimental Parameters

List Beam Energies and Beam Days: (e.g. 30 Days at 11 GeV, 20 Days at 8 GeV)
25 days at 12GeV

List Range of Beam Currents: (e.g. 10-60 mA)
1nA - 50nA

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

Contact person:

Name : Rory Miskimen

Institution : Univ. of Massachusetts

Address : 710 N. Pleasant St.

Spokespersons:

- Rory Miskimen
- Elton Smith
- David Lawrence
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Email :	miskimen@physics.umass.edu		

Contact person:	
Recipient Date :	5/5/2013
By :	

LAB RESOURCES LIST

Jlab Proposal No. : Date

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)

Muon detection system

New Support Structures

Data Acquisition/ Reduction

New Support Structures

New Software

Major Equipment

Magnets :

Power Supplies:

Targets:

Solid target at z=1cm (in Hall-D coordinate system)

Detectors:

muon detection system (additional wire chambers and Iron absorber)

Electronics:

Readout for muon detection system

Computer Hardware:

Other:

Other:

BEAM REQUIREMENTS LIST

Jlab Proposal No. **Date :**

Hall: **Anticipated Run Date** **PAC Approved Days:**

Spokesperson: **Phone:**

Email: **Hall Liaison:**

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.)

Condition No.	Beam Energy (MeV)	Mean Beam Current (μ A)	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	12GeV	0.050	linearly polarized photons	Sn116	440	600

The beam energies, E_{Beam} , available are: $E_{\text{Beam}} = N \times E_{\text{Linac}}$ where $N = 1, 2, 3, 4,$ or 5 . $E_{\text{Linac}} = 800$ 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 :

Check all items for which there is an anticipated need.

<p>Cryogenics</p> <p><input type="checkbox"/> beamline magnets</p> <p><input type="checkbox"/> analysis magnets</p> <p><input type="checkbox"/> target magnets</p> <p>type: <input type="text"/></p> <p>flow rate: <input type="text"/></p> <p>capacity: <input type="text"/></p>	<p>Electrical Equipment</p> <p><input type="checkbox"/> cryo/electrical devices</p> <p><input type="checkbox"/> capacitor banks</p> <p><input type="checkbox"/> high voltage</p> <p><input type="checkbox"/> exposed equipment</p>	<p>Radioactive/Hazardous Materials</p> <p>List any radioactive or hazardous/toxic materials planned for use:</p> <p><input type="text"/></p>
<p>Pressure Vessels</p> <p><input type="checkbox"/> inside diameter</p> <p><input type="checkbox"/> operating pressure</p> <p><input type="checkbox"/> window material</p> <p><input type="checkbox"/> window thickness</p>	<p>Flammable Gas or Liquids</p> <p>type: <input type="text"/></p> <p>flow rate: <input type="text"/></p> <p>capacity: <input type="text"/></p>	<p>Other Target Materials</p> <p><input type="checkbox"/> Beryllium (Be)</p> <p><input type="checkbox"/> Lithium (Li)</p> <p><input type="checkbox"/> Mercury (Hg)</p> <p><input type="checkbox"/> Lead (Pb)</p> <p><input type="checkbox"/> Tungsten (W)</p> <p><input type="checkbox"/> Uranium (U)</p> <p><input type="checkbox"/> *Helium (³He)</p> <p><input type="checkbox"/> Other (List below)</p> <p><input type="text" value="1,Sn116"/></p>
<p>Special Target Materials</p> <p><input type="checkbox"/> *Helium (³He)</p> <p><input type="checkbox"/> Deuterium</p>	<p>Drift Containers</p> <p>type: <input type="text"/></p> <p>flow rate: <input type="text"/></p> <p>capacity: <input type="text"/></p>	<p>Large Mech. Structure/System</p> <p><input type="checkbox"/> lifting devices</p> <p><input type="checkbox"/> motion controllers</p> <p><input type="checkbox"/> scaffolding or</p> <p><input type="checkbox"/> elevated platforms</p>
<p>Vacuum Vessels</p> <p><input type="checkbox"/> inside diameter</p> <p><input type="checkbox"/> operating pressure</p> <p><input type="checkbox"/> window material</p> <p><input type="checkbox"/> window thickness</p>	<p>Radioactive Sources</p> <p><input type="checkbox"/> permanent installation</p> <p><input type="checkbox"/> temporary use</p> <p>type: <input type="text"/></p> <p>strength: <input type="text"/></p>	<p>General</p> <p>Experiment Class</p> <p><input type="checkbox"/> Base Equipment</p> <p><input type="checkbox"/> Temp. Mod. to Base Equip.</p> <p><input type="checkbox"/> Permanent Mod to Base Equipment</p> <p><input type="checkbox"/> Major New Apparatus</p> <p>Other: <input type="text"/></p>
<p>Lasers</p> <p>type: <input type="text"/></p> <p>wattage: <input type="text"/></p> <p>class: <input type="text"/></p> <p>Installation:</p> <p><input type="checkbox"/> permanent</p> <p><input type="checkbox"/> temporary</p> <p>Use: <input type="text"/></p>	<p>Hazardous Materials</p> <p><input type="checkbox"/> cyanide plating materials</p> <p><input type="checkbox"/> scintillation oil (from)</p> <p><input type="checkbox"/> PCB's</p> <p><input type="checkbox"/> methane</p> <p><input type="checkbox"/> TMAE</p> <p><input type="checkbox"/> TEA</p> <p><input type="checkbox"/> photographic developers</p> <p><input type="checkbox"/> other (list below)</p>	

- | | |
|--------------------------------------|--|
| <input type="checkbox"/> calibration | |
| <input type="checkbox"/> alignment | |

Data:

Proposal Title: Measuring the Charged Pion Polarizability in the $\gamma \gamma \rightarrow \pi^+ \pi^-$ Reaction

Spokesperson: Rory Miskimen **Experimental Hall:**

Raw Data Expected

Silo/Mass Storage (Tape): 320 TB

Amount of Simulated Data Expected (TB): 9

Amount of Raw Data Expected (TB) 260

Amount of Processed Data Expected: 35

Online Storage (Disk) Required (TB): 25

Imported Data Expected from Offsite Institutions: 0

Exported Data Expected to Offsite Locations: 20

Computing:

Simulation Requirements (SPEC CINT2000 hrs):

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

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.
