

**Jefferson Lab PAC 48  
Proposal Cover Sheet**

**Proposal Type:** Jeopardy  
**Physics Category** 12GeV  
**Proposal Title:** RG-K Quark-Gluon Confinement & Strong QCD  
**Experiment Hall:** B  
**Days Requested for Approval:** 88

**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.

E12-06-108A, E12-09-003, E12-06-119, E12-06-108, E12-12-007 (RG-A)

**Collaboration-Approved Proposals:**

If you will be running in parallel with an approved experiment, please indicate the experiment number

N/A

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If you will be running in parallel with an approved experiment, please indicate the experiment number

N/A

**Contact Person:**

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**Spokesperson:**

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## **Lab Resources List**

**JLab Proposal No. :** No Data

**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

None beyond standard Hall B

### **New Support Structures:**

None beyond standard Hall B

## **Data Aquisition/ Reduction**

### **New Support Structures:**

JLab computer farm, Hall B DAQ, MSS for data storage, work disk space for cooking and analysis, standard Hall B online/offline computing, Open Science Grid for simulation

### **New Software:**

Standard Hall B DAQ for online, standard calibration, cooking, and analysis software and support for Hall B data reduction, analysis, and simulation, CLAS12 database

## **Major Equipment:**

### **Magnets:**

CLAS12 torus and solenoid, standard beamline magnets including the Hall B photon tagger for beam tuning and Moller polarimeter

### **Power Supplies:**

Standard supplies for Hall B operation of CLAS12 and beamline elements

**Detectors:**

CLAS12, MM, FT, CND, RICH, Tagger, beamline

**Electronics:**

Standard for Hall B and CLAS12, including Moller polarimeter

**Computer Hardware**

Standard for Hall B online, JLab computer farm, MSS, and work disk storage, Open Science Grid

**Other:**

None beyond standard Hall B

## Beam Requirements List

**JLab Proposal No:** No Data

**Hall:** B

**Date:** No Data

**Anticipated Run Date:** No Data

**PAC Approved Days:** No Data

**Contact Person:** Annalisa D Angelo

**Phone:** +390672594562

**Email:** annalisa.dangelo@roma2.infn.it

**Hall Liaison:** No Data

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( $\mu$ A)	Polarization and Other Requirements	Est Beam-On Time(hours)	Target Materials	Target Thickness(mg/cm <sup>2</sup> )
6.6	0.100	Beam Polarization > 85%	1056	LH2	5 cm
8.8	0.100	Polarized Beam > 85%	1056	LH2	5 cm

The beam energies, EBeam, available are:  $E_{\text{Beam}} = N \times E_{\text{Linac}}$  where  $N = 1, 2, 3, 4, \text{ or } 5$ .  $E_{\text{Linac}} = 800$  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: No Data

Date: No Data

Check all items for which there is an anticipated need.

<b>Cryogenics</b> <input type="checkbox"/> Beamline Magnets <input checked="" type="checkbox"/> Analysis Magnets <input type="checkbox"/> Target Magnets Type: Torus and Solenoid Flow Rate: Standard Capacity: Standard	<b>Electrical Equipment</b> <input checked="" type="checkbox"/> Cryo/Electrical Devices <input type="checkbox"/> Capacitor Banks <input checked="" type="checkbox"/> High Voltage <input type="checkbox"/> Exposed Equipment	<b>Radioactive Materials</b> List radioactive or hazardous/toxic materials planned for use: N/A
<b>Pressure Vessels</b> Inside Diameter: LH2 standard Operating Pressure: LH2 standard Window Material: LH2 standard Window Thickness: LH2 standard	<b>Flammable</b> Type: LH2 standard Flow Rate: LH2 standard Capacity: LH2 standard	<b>Other Target Materials</b> <input type="checkbox"/> Beryllium <input type="checkbox"/> Lithium <input type="checkbox"/> Mercury <input type="checkbox"/> Lead <input type="checkbox"/> Tungsten <input type="checkbox"/> Uranium <input type="checkbox"/> Helium Other Target Material: N/A
<b>Special Target Materials</b> <input type="checkbox"/> Helium <input type="checkbox"/> Deuterium	<b>Drift Container</b> Type: Standard Flow Rate: Standard Capacity: Standard	<b>Large Mech. Structures</b> <input checked="" type="checkbox"/> Lifting Devices <input type="checkbox"/> Motion Controllers <input type="checkbox"/> Scaffolding <input type="checkbox"/> Elevated Platforms
<b>Vacuum Vessels</b> Inside Diameter: Standard Operating Pressure: Standard Window Material: Standard Window Thickness: Standard	<b>Radioactive Sources</b> <input type="checkbox"/> Permanent Installment <input type="checkbox"/> Temporary Use Type: N/A Strength: N/A	<b>General</b> <input checked="" type="checkbox"/> Base Equipment <input type="checkbox"/> Temp. Mod. To Base Equip. <input type="checkbox"/> Perm. Mod. to Base Equip. <input type="checkbox"/> Major New Apparatus Other General: N/A
<b>Lasers</b> Type: Standard Wattage: Standard Class: Standard <input type="checkbox"/> Permanent <input type="checkbox"/> Temporary <input checked="" type="checkbox"/> Calibration <input type="checkbox"/> Alignment	<b>Hazardous Materials</b> <input type="checkbox"/> Cyanide Plating Materials <input type="checkbox"/> Scintillation oil <input type="checkbox"/> PCBs <input type="checkbox"/> Methane <input type="checkbox"/> TMAE <input type="checkbox"/> TEA <input type="checkbox"/> Photographic Developers Other Hazardous Materials: N/A	

## **Computing Requirements List**

**Proposal Title:** RG-K Quark-Gluon Confinement & Strong QCD

**Contact Person:** Annalisa D Angelo

**Experiment Hall:** B

### **Data**

**Silo/Mass Storage (Tape):** 4710 TB

**Amount of Simulated Data Expected (TB):** 400 TB

**Amount of Raw Data Expected (TB):** 3200

**Amount of Processed Data Expected:** 1120

**Online Storage (Disk) Required (TB):** 400

**Imported Data Expected from Offsite Institutions:** 400 TB

**Exported Data Expected to Offsite Locations:** 3350 TB

### **Computing**

**Simulation Requirements (SPEC CINT2000 hrs):** 63 M core hours

**Production (Replay, Analysis, Cooking) Requirements (SPEC CINT2000 hrs):** 40 M Core 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.

JLab will provide MSS, disk space for data processing/cooking, disk space for DSTs. DSTs will be made available for offsite copying and analysis, Open Science Grid for simulation.

### **Assumed Resource Requirements:**

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

Standard Hall B requirements