Jefferson Lab
Thomas Jefferson National Accelerator Facility

Jefferson Lab PAC 48
Proposal Cover Sheet

Proposal Type: Jeopardy
Physics Category12GeV
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:

Name:	Annalisa D Angelo
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Spokesperson:

1. Volker D. Burkert
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7. Victor Mokeev

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/offine 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(μA)	Polarization and Other Requirements	Est Beam-On Time(hours)	Target Materials	Target Thickness(mg/cm²)
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: 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: No Data **Date:** No Data

Check all items for which there is an anticipated need.

Cryogenics

- ☐ Beamline Magnets
- ☑ Analysis Magnets
- ☐ Target Magnets

Type: Torus and Solenoid
Flow Rate: Standard
Capacity: Standard

Electrical Equipment

- ☑ Cryo/Electrical Devices
- ☐ Capacitor Banks
- ☑ High Voltage
- ☐ Exposed Equipment

Radioactive Materials

List radioactive or hazardous/toxic materials planned for use:
N/A

Pressure Vessels

Inside Diameter: LH2 standard
Operating Pressure: LH2 standard
Window Material: LH2 standard
Window Thickness: LH2 standard

Flammable

Type: LH2 standard
Flow Rate: LH2 standard
Capacity: LH2 standard

Drift Container

Type: Standard
Flow Rate: Standard
Capacity: Standard

Other Target Materials

- ☐ Beryllium
- ☐ Lithium
- ☐ Mercury
- ☐ Lead
- ☐ Tungsten
- ☐ Uranium
- ☐ Helium

Other Target Material:
N/A

Special Target Materials

- ☐ Helium
- ☐ Deuterium

Vacuum Vessels

Inside Diameter: Standard
Operating Pressure: Standard
Window Material: Standard
Window Thickness: Standard

Radioactive Sources

- ☐ Permanent Installment
- ☐ Temporary Use

Type: N/A
Strength: N/A

Large Mech. Structures

- ☑ Lifting Devices
- ☐ Motion Controllers
- ☐ Scaffolding
- ☐ Elevated Platforms

Lasers

Type: Standard
Wattage: Standard
Class: Standard

- ☐ Permanent
- ☐ Temporary
- ☑ Calibration
- ☐ Alignment

Hazardous Materials

- ☐ Cyanide Plating Materials
- ☐ Scintillation oil
- ☐ PCBs
- ☐ Methane
- ☐ TMAE
- ☐ TEA
- ☐ Photographic Developers

Other Hazardous Materials:
N/A

General

- ☑ Base Equipment
- ☐ Temp. Mod. To Base Equip.
- ☐ Perm. Mod. to Base Equip.
- ☐ Major New Apparatus

Other General:
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