

## EXPERIMENT DESCRIPTION AND REQUIREMENTS

THE SUBMITTED INFORMATION IS CONSIDERED FROZEN. MODIFICATIONS TO THE EXPERIMENT SHOULD BE APPROVED BY THE DIVISION MANAGEMENT.

**Experimental Hall:** A

**Experiment Number:**

E12-12-004

**Days Approved:**

45

90 days

**Estimated Installation Time:**

10 days

**Estimated Checkout Time:**

**Spokespersons:**

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**Short (Technical) Description of the Experiment (max 100 words)**

Parity violating electron scattering from Ca-48 to measure weak form factor. Single arm measurement, duplicated in each HRS, with Ca-48 solid targets. Requires septum for small scattering angles, and beam collimation plus radiation shielding to control radiation damage to essential equipment.

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

45 days at 2.2 GeV

**List Range of Beam Currents: (e.g. 10-60  $\mu$ A)**

50 nA - 150 microAmp

**Base Equipment Used**

**(including description of conditions)**

HRS and septum

**Modifications to Base Equipment**

**(or use of base equipment with different conditions)**

Target moved upstream (4 degree scattering angle)

3 coils, shims in septum magnet (configuration used for g2p)

**New Equipment**

Target chamber

Target ladder

Beam collimator

Radiation shielding

High-field Moller polarimeter

Quartz detectors in detector stack

GEM detectors in detector stack

<b>Target Requirements</b>	Ca-48 target Thick non-enriched Ca target for commissioning Water cell target for pointing calibration Optics foils. Thin Ca target for low current calibration
<b>Beam Line Requirements (including description of conditions)</b>	150 microAmps, 2.2 GeV. Transverse polarization <2%.
<b>Utilities Requirements</b>	~0.5 MW + HRS operation
<b>Power (MW)</b>	
<b>Power Supplies (V, I)</b>	~1100 A at total ~420 V
<b>Cryogenics (T, g/s)</b>	HRS, Target. Not estimated here, but inside previous operational parameters.
<b>LCW (gpm)</b>	~250 gpm
<b>Cabling (#, ft)</b>	
<b>Other</b>	
<b>Additional Requirements</b>	
<b>Hazardous Materials</b>	
<b>Flammable gases</b>	
<b>Lasers</b>	Compton laser only - standard apparatus.
<b>Pressure Vessels</b>	
<b>Platforms or Scaffolding</b>	Installation for target, septum, shielding.
<b>Other</b>	