

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: E12-11-101	Days Approved: 35
	Estimated Installation Time: 90 days
	Estimated Checkout Time: 10 days

Spokespersons:
Kent Paschke, Robert Michaels, Krishna Kumar, Paul Souder, Guido Urucioli

Short (Technical) Description of the Experiment (max 100 words)
Parity violating electron scattering from Pb-208 to measure weak form factor. Single arm measurement, duplicated in each HRS, with cryo-cooled Pb-208 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)
35 days at 1 GeV

List Range of Beam Currents: (e.g. 10-60 μ A)
50 nA - 70 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 (5 degree scattering angle)
3 coils in septum magnet

New Equipment
Target chamber
Target ladder
Beam collimator
Radiation shielding
High-field Moller polarimeter
Quartz detectors in detector stack
GEM detectors in detector stack

Target Requirements	Pb-208 foils sandwiched with diamond foils (10x) Thick non-enriched Pb target for commissioning Water cell target for pointing calibration Optics foils. Thin lead target for low current calibration
Beam Line Requirements (including description of conditions)	70 microAmps, 1 GeV. Transverse polarization <2%.
Utilities Requirements	~0.1 MW + HRS operation
Power (MW)	
Power Supplies (V, I)	430 A at 180 V
Cryogenics (T, g/s)	HRS, Target. Not estimated here, but inside previous operational parameters.
LCW (gpm)	~250 gpm
Cabling (#, ft)	
Other	
Additional Requirements	
Hazardous Materials	
Flammable gases	
Lasers	Compton laser only - standard apparatus.
Pressure Vessels	
Platforms or Scaffolding	Installation for target, septum, shielding.
Other	