**Appendix A: Detailed JLab report**

**Report Period of Performance:**

FY23 – Q1: 09/01/2022 – 12/31/2022

**Co-Principal Investigator:**

Riad Suleiman, with Joe Grames and Matt Poelker (Jefferson Lab), and Eric Voutier (IJCLab, Orsay, France) and Greg Blume (graduate student – ODU).

**Work-scope Highlights:**

Jefferson Lab’s contribution to this project is to provide a Compton Transmission Polarimeter, which will be used to measure beam polarization when SRF photogun employs a GaAs photocathode. IJCLab is contributing to Jefferson Lab’s effort.

**Q1 FY23 Brief summary of activity issues, concerns, successes:**

*Activity successes:*

1. Polarimeter has been calibrated at Jefferson Lab
2. Graduate student (Greg) finished data analysis. Now working to complete GEANT4 simulation to compare to data.
3. For second polarimeter and DAQ: Radiator #2 needs to be fabricated – this polarimeter will stay at Jefferson Lab
4. Working on documentations and writing a paper for publication
5. Greg submitted an abstract to IPAC'23

*Issues and concerns: Now under 1-year NCE that ends 9/23. Plan to submit an NCE request for another year for BNL install.*

**Milestones**

1. Polarimeter is ready. Now waiting on BNL to give us the green light to move and install the polarimeter at their facility (expected in Fall 2023).



Figure 1: Measured Compton transmission asymmetry as a function of the magnet current for electron beam kinetic energy of 5 MeV. The Compton polarimeter analyzing power at magnet current of 5 Amps is $1.21\pm 0.04 \left(stat\right)\%$

**Budget**

Summary of total expenditures:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  **ID #**  | **Item/Task**  | **Baseline****Total Cost**(AY$) | **Costed &****Committed**(AY$) | **Estimate****To Complete**(AY$) | **Estimated****Total Cost**(AY$) |
| COMTRA  | Compton Trans Polarimeter | $400,200  | $338,616 | $61,584 | $400,200  |
|  | Totals: | **$400,200** | **$338,616** | **$61,584** | **$400,200**  |

* Note: Costed and Committed numbers are as of December 31, 2022

Summary of expenditures by fiscal year (FY):

|  |  |  |  |
| --- | --- | --- | --- |
| FOA Funding | **FY 2020** | **FY 2021** | **Total** |
| a) Funds allocated | $200,100 | $200,100 | $400,200 |
| b) Actual costs to date  | $200,100 | $117,572 | $317,672 |
| c) Uncosted commitments | $0 | $20,944 | $20,944 |
| d) Uncommitted funds  | $0 | $61,584 | $61,584 |