**Appendix A: Detailed JLab report**

**Report Period of Performance:**

4/1/2021 –6/31/2021

**Co-Principal Investigator:**

Riad Suleiman, with Joe Grames and Matt Poelker, and Eric Voutier (IJCLab)

**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 the SRF photogun employs a GaAs photocathode. (IJCLab, Orsay, France) is contributing to Jefferson Lab’s effort.

**Q3 FY21 Brief summary of activity issues, concerns, successes:**

*Activity successes:*

1. Jefferson Lab Fast Electronics Group has finished programming of the flash analog-to-digital convertor (FADC) and now working on the user interface of the data acquisition system.
2. Student Benjamin Fernandes Neres (IJCLab):
   1. GEANT4 simulation model of the Compton transmission polarimeter was successfully implemented.
   2. Optimization of the polarimeter in terms of analyzer and detector dimensions is progressing.
   3. Started evaluation of the performance within BNL beam conditions (duration of a measurement, radiation damage to the crystal detector).

*Issues and concerns:*

1. Exploring the Beam Current Monitor (BCM) signal available now and whether there is a need for new BCM hardware.
2. Working with BNL to clarify network resources and connections available for the portable data acquisition system.

**Milestones**

1. Starting with Q3, IJCLab will contribute to the design of the polarimeter, will provide some components (depending on final design parameter), will participate in the commissioning of the polarimeter at Jefferson Lab, and finally will participate in polarization measurement at BNL.
2. DAQ design completed and implementation started.
3. Simulation model of polarimeter has been created now working on optimization.

**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 | $200,100 | $0 | $200,100 | $200,100 |
|  | Totals: | **$200,100** | **$0** | **$200,100** | **$200,100** |

*Notes:*

* *Costed and Committed numbers are as of June 31st, 2021.*

Summary of expenditures by fiscal year (FY):

|  |  |
| --- | --- |
|  | FY 2020 |
|  |  |
| a) Funds allocated | $200,100 |
| b) Actual costs to date | $0 |
| c) Uncosted commitments | $0 |
| d) Uncommitted funds | $200,100 |