**Y1Q1 Tasks (Oct 1 – Dec 31, 2020)**

1. Identify a graduate student for a PhD thesis on developing an electron driven polarized positron source for CEBAF.
2. Gain AD and HR approval to post an announcement for a new post-doc position.
3. Evaluate polarized electromagnetic cross-sections analytically and numerically over range of 10-1000 MeV for Geant4 simulations; complete at least 50% of the task (there are two approaches Olsen & Maximon with screening or Kuraev et al.)
4. Implement and bench-mark positron particle spin tracking in General Particle Tracer (GPT); complete at least 50% of the task (there are 8 steps).
5. Review of past, present and planned positron sources with experts; complete at least organization of this meeting; includes conversion target, collection magnet, rf cavities.

**Y1Q2 Tasks (Jan 1 – Mar 31, 2021)**

1. Complete interviews and offer post-doc position.; this concludes this effort.
2. Complete evaluation of polarized electromagnetic cross-sections; this includes deciding on the framework, implementing code to Geant4 and benchmarking; this concludes this effort.
3. Complete implementation of spin tacking in GPT; this includes completing the Geant4 interface and porting a version to the JLab MPI version; this concludes this effort.
4. Complete summarizing landscape of electron driven positron sources; this includes technological limitations and meeting with experts; this concludes this effort.

**Y1Q3 Tasks (Apr 1 – Jun 30, 2021)**

1. Use Geant4 to evaluate particle distributions and deposited energy as a function of beam energy, target thickness and target composition 10-1000 MeV; complete at least 50% of this task.
2. Use 12 GeV CEBAF model and/or experimental results to evaluate and/or summarize the required 6d acceptance of potential positron injection configurations 10-1000 MeV.
3. Use GPT to code a working GPT model of an electron driven positron source with suitable geometry to evaluate positron collection efficiency and polarization.

**Y1Q4 Taks (Jul 1 – Sep 30, 2021)**

1. Use Geant4 to complete the analysis of the target requirements as a function of beam energy, target thickness and target composition 10-1000 MeV; this concludes this effort.
2. Use Geant4 to evaluate the relative efficiency of a two-stage hybrid target (radiator followed by converter) relative to a single stage conventional target.
3. Use GPT to evaluate the relative efficiency of particle collection as a function of momentum acceptance; evaluate the possibility for a two-momentum collection geometry.