



FFA@CEBAF Permanent Magnet Resiliency in Real Radiation Environment

FY24 Q2 Update

Ryan Bodenstein

Team: Kirsten Deitrick, Edith Nissen, Randika Gamage

2024/04/06

Work item	Description	Category	Progress
Due date : 04/01/2024 (10)			
Create Working Radiation Map and Dosimetry Swap Out Schedule	Analyze the installed dosimetry for integrated dose and use this information to finalize the sample location map and dosimetry swap-out schedule.	Research	In progress
Develop labelling and documentation standards and practices.		Planning	In progress
Develop Testing Procedures		Research	In progress
Create 3D Printed Mounts - Magnets & Assemblies	Assuming they arrive in time, design and print the mounts to hold the samples and assemblies.	Engineering Design	In progress
Create 3D Printed Mounts/Guides - Measurement Devices	Assuming they arrive in time, create 3D printed mounts and/or guides to help measurement consistency and reproducibility.	Design Engineering	In progress
Test/QA Equipment & Samples	Test/QA equipment and samples as they arrive. - If measurement devices are delayed, develop a temporary		In progress
Reverse-Flux ID and Prioritize	If adequate samples arrive, identify and prioritize specific geometries and magnetic flux alignments to install and simulate. Design and optimize magnet assembly layouts to approximate the different demagnetization sensitivities.	Research Design	In progress
CBETA Spares - Measure/Test/Placement Planning	If the CBETA spare(s) arrive, develop measurement protocol, measure the fields, and plan placement into CEBAF.	Research	In progress
FFA@CEBAF Prototype Measurement	If the prototype arrives from BNL/Stephen, attempt to duplicate the field-mapping performed at BNL. Plan for placement in CEBAF.	Research	Not started
Simulation Prioritization/Work Breakdown	Prioritize geometries/energies/etc ... and divide work among collaborators.	Planning	In progress

Path to Completion

- Tracking quarterly milestones, documenting as we progress
- First half of FY24 is mainly setup and planning
- All “big” orders placed – some arrived, awaiting some

Possible Delays

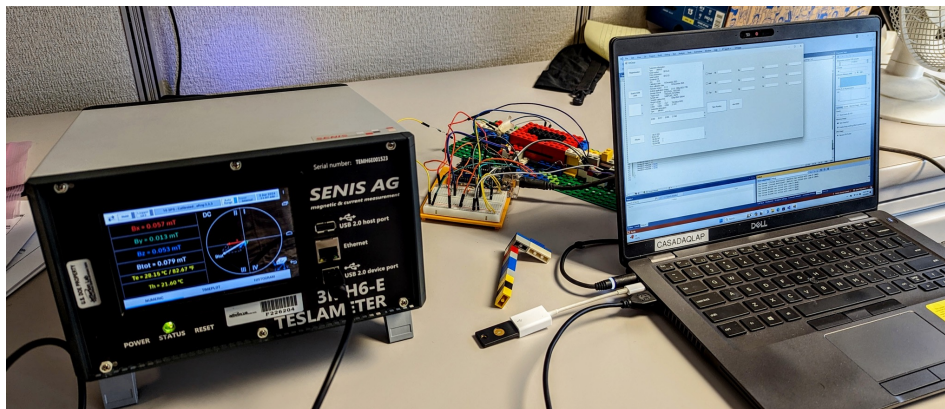
- Computer issues delayed code install for several of us, but being addressed
- Teslameter repair delayed things a bit
- One investigator may be “tied up” with visa delays – attempting to finish some work early in case
- Helmholtz Coil delayed
- ePAS and maintenance schedules now different than during planning
 - Longer SAD means we can still get everything done

Publication Outlook

- Presented at FFA’23 Workshop
- Presented at JLAAC in January
 - Looking into informal collab with BNL reviewer
- Contributions to workshops/conferences (IPAC, FFA, etc...)
 - IPAC in May – 3 contributions
- Journal papers:
 - Hoping for two: simulation work + full results

Q2 went well, but presented challenges:

- Teslameter arrived only partially functioning – needed repairs (completed)
 - Borrowed spares from others at lab for short-term workaround
- Helmholtz Coil promised for March 22 – currently delayed
 - Expected 3/22, now due end of April
 - Other coils at lab, but not with flux meter or the same size coils
- Delayed dosimetry arrival, and new maintenance schedule delayed dosimetry mapping, but still roughly on schedule
 - All optichromic rods read, awaiting area dosimetry readings
 - NDX detector data being examined for use
- 3D printed mount prototypes under development – will outsource for some mass printing
- BDSIM simulations underway
- Minor safety incident – SmCo is very brittle – now using gloves and eye protection
- DAQ has a great start – reading Teslameter and LED setup



FFA@CEBAF Permanent Magnet Resiliency in Real Radiation Environment

Ryan Bodenstein (LD2402)
WBS 1.04.LD.013 (Loaded \$K)

