Todd Satogata
Previous two weeks (Apr 11 – Apr 22)
- EIC Meetings (management, RF, crab, cooling, impedance, team, R&D, beam-beam)
- EIC BNL Meetings (Ferdinand and L2s, Design/R&D leadership)
- EIC L2 cost/schedule meetings: PSQ@EIC paper update/editing
- MGMT Meetings (Leadership/Dept Heads, CASA coffee, P&C Apr 21)
- MGMT Q2 PEMP content update/review
- SERVICE APS DPB business meeting (Apr 11)
- ODU Sergei Nagaitsev visit/seminar (Apr 14)

Next two weeks (Apr 25 – May 6)
- EIC Meetings (management, RF, crab cooling, impedance team, R&D, beam-beam)
- EIC BNL Meetings (Ferdinand and L2s, Design/R&D leadership)
- EIC L2 cost/schedule meetings; PSQ@EIC paper update/editing
- EIC Project management training (online, ongoing)
- EIC Continue evaluating crab multipole time-domain simulations
- MGMT Meetings (Leadership/Dept Heads, CASA coffee)
- MGMT NSAC open meeting (Apr 28), RPTO Kickoff (May 6)
- MGMT MFURA application reviews, selection meeting (May 4)
- OPS 12 GeV paper writing (for Geoff Krafft)
- ODU Faculty Meeting (May 3)
- SICK (Apr 27)

Alex Bogacz
Previous two weeks (Apr 11 – Apr 22)
- Mentoring Isurumali on Spr/Rec optics
- FFA@CEBAF collaborative work
- ERL'22 SPC work, invited talk selection
- Invention disclosures review
- Vacation
- Finalizing write up on the LHeC ERL and PERLE for "Future of LHC"

Next two weeks (Apr 25 – May 6)
- Preparing a talk on PERLE experimental area design for PERLE Collaboration Workshop
- FFA@CEBAF collaborative work
- Contributing to IPAC'22 papers
- Mentoring Isurumali on isochronous arc optics
- PERLE Management Board work

Ryan Bodenstein
Previous two weeks (Apr 11 – Apr 22)
- Various OPS related meetings
- FFA@CEBAF collab work
  - First spreader done unrealistically strong dipoles. Looking into new layouts
  - FOA administration, edits, and submission
- Positron/FFA liaison work
- Student Guidance

- Isurumali – guidance for arc optics
- Alex C –general guidance and mentorship, checking CAS attendance funded through traineeship
- LDRD work
  - Q2 report delievered
  - Included CASA member to take up work intended for postdoc
- Ice cream social

Next two weeks (Apr 25 – May 6)
- Various OPS related meetings
- FFA@CEBAF collab work
  - Re-designing spreader – based on "Option A" from Chao/Jay
  - IPAC travel and poster preparation
- Positron/FFA liaison work
  - Made slides for Reza
- Student Guidance
  - Isurumali – guidance for arc optics, IPAC paper
  - Alex C –general guidance and mentorship, getting lab laptop
- LDRD work
  - General organizational work
  - Code translation
- Thursday CEBAF Center social gathering

Rui Li
Previous two weeks (Apr 11 – Apr 22)
- Working on developing analytical theory toward explaining my numerical observation of the characteristics of the coupled-bunch modes, which are somewhat quantitatively different from the simple TCBI theory (The TCBI theory assumes a distributed transverse wake in the ring but in numerical modeling a localized transverse kick is typically used).
- Vacation (4/12, 14-15)

Next two weeks (Apr 25 – May 6)
- Continue developing the matrix transport approach for the TCBI theory, checking the consistency and relation between differential equation approach and the matrix approach, and their relations with the tracking simulation.
- Compare the new analysis with my previous simulation results

Edy Nissen
Previous two weeks (Apr 11 – Apr 22))
- Attend Beam-beam and RCS meeting
- Attend required OPS/Bteam meetings
- Worked on paperwork for IPAC travel
- Work on DODGE data for IPAC paper and prepare beam time proposal
- Work on Raster project for Hall D
- Attend Hall D beam line working group meeting

Next two weeks (Apr 25 – May 6)
- Attend require OPS/Bteam meetings

- Attend Beam-beam and RCS meetings
- Work on DODGE beam time proposal, will submit by April 30th
- Work on Hall D Raster project for Hall D
- Attend Hall D Beamline working group meeting
- Will need to start rad worker training for Hall D collaboration
- I will be taking half a day off on May 6

Chris Tennant
Previous two weeks (Apr 11 – Apr 22)
- AI FOA: coordination meetings (project-wide, field emission, fault prediction) outline Monibor dissertation topics
- LD2202: wasting inordinate amount of time trying to use Jupyter Hub
- RADSA2: data analysis/exploration, tracking down missing PVs from archiver
- R&D FOA proposal: finalize budget, budget justification, final edits submission
- virtually attend (some of) the AI for Robust Engineering & Science(AIRES3) workshop
- Lasitha separation duties (HR, property transfer, knowledge transfer, etc.)
- strategizing for how to understand and deal with data drift for all our ML/AI projects involving CEBAF
- Training
- Vacation

Next two weeks (Apr 11 – May 6)
- AI FOA: Coordination meetings (project-wide, field emission, fault prediction)
- LD2202: setup GPU environment to start running code, plan beam studies work
- RADSA2: train inverse model

Accelerator R & D - Yuhong Zhang

Yuhong Zhang
Previous two weeks (Apr 11 – Apr 22)
-

Next two weeks (Apr 25 – May 6)
-

Kirsten Deitrick
Previous two weeks (Apr 11 – Apr 22)
- SHC ERL
  - 4-dipole zigzag stretcher with parallel plate dipoles completed
  - Microbunching simulation
  - Swap out 2-cell srf cavity in injector for two 1-cell cavities
- FFA cell lattice for FFA@CEBAF

- Track down discrepancies
- BMAD tutorial
- Meetings: CASA Coffee, JLab EIC, EIC Weekly, EIC Coffee, Strong Hadron Cooling, EIC Cooler Lattice, FFA@CEBAF, ODU Colloquium (Sergei Nagaitsev), Ryan's LDRD Biweekly

Next two weeks (Apr 25 – May 6)
- SHC ERL
  - 4-dipole zigzag stretcher with parallel plate dipoles completed
  - Working on 5-dipole zigzag stretcher with parallel plate dipoles (Dave Douglas Tech Note)
  - Microbunching simulation (energy spread scan, tracking down Matlab functionalities
- FFA cell lattice for FFA@CEBAF
  - Track down discrepancies
- Determine longitudinal dilution through FFAs
- Meetings: CASA Coffee, JLab EIC, EIC Weekly, EIC Coffee, Strong Hadron Cooling, EIC Cooler Lattice, BTeam FFA@CEBAF, Ryan's LDRD Biweekly

Bhawin Dhital
Previous two weeks (Apr 11 – Apr 22))
- Was working to figure out the cooling requirements in a dual energy storage ring cooler
- Was working on thesis writing
- Was working on IPAC22 paper preparation

Next two weeks (Apr 25 – May 6)
- Will continue on thesis writing and on cooling simulations in a dual energy storage ring
- Will work on IPAC'22 papers
- Will work on PRAB paper

Amy Sy
Previous two weeks (Apr 11 – Apr 22)
- Laser particulate counter: Continued work on MATLAB remote control of the translation stage in the new test setup. Able to establish remote control of the linear stage, but the stage/controller combination available is likely too slow - will work with a manually controlled stage for the next series of tests.
- Positrons: Continued work on LDRD preliminary proposal. Next meeting on spin rotator design. Working on using the last few dipoles in the Hall A line as the basis for a first spin rotator design. Trying to find solutions for universal spin rotator magnetic fields that will allow for vertical to longitudinal spin rotation over the energy range from 1-11 GeV - so far, one solution exists that requires a total bend angle that is larger than the bend in the Hall A line.

Next two weeks (Apr 25 – May 6)
- Laser particulate counter: Established a preliminary testing plan in LERF lab 2 with the 44 connected channels currently available. The test setup in lab 2 allows for well-controlled, easily repeatable passage of wires and mounted glass slides with dots representing particles. The first set of tests will pass a wire across all working channels at several different velocities and evaluate whether there are characteristics in the signals that are velocity dependent, and whether the

velocity information can be extracted from the data. These tests will be repeated at several different locations within the beampipe area.

- Positrons: Submitted LDRD preliminary proposal on using degraded electron beams to assess CEBAF. The objectives of the proposal are to design and install a beamline at the 5D line in the injector that will generate electron beams with enlarged phase space distributions for injection into CEBAF; characterize the acceptance of CEBAF using these degraded electron beams, where the phase space distributions will cover a range from the nominal parameters up to parameters approximating a positron beam distribution; and generating and transporting positron beams through parts of the injector beamline. Continued work on universal spin rotator design - revisiting the analytical formulas to look for solutions over 1-11 GeV.

Computational Physics - Yves Roblin

Yves Roblin
Previous two weeks (Apr 11 – Apr 22)
- Bteam coordination/meetings
- Positron project meetings & PhD student mentoring
- Optics work for CEBAF
- Panel interviews for positron postdoc
- Abstract writing/talk preparation for NAPAC 2022
- Reviewing injector apertures in the hicane, in particular from 0R08 to MBL0R04
- Designing new ARC1/ARC2 optics for low dispersion runs
- Reviewing ORFP procedures prior to startup/adjusting as needed

Next two weeks (Apr 25 – May 6)
- Bteam coordination/meetings
- Continue working on projects from previous two weeks

Randi Gamage
Previous two weeks (Apr 11 – Apr 22)
-
Next two weeks (Apr 25 – May 6)
-

River Huang
Previous two weeks (Apr 11 – Apr 22)
- EIC Beam-Beam project: Continuing working on checking the dynamic status of HSR: Linear optics and the change of the fractional part of betatron tunes for different configurations.

Next two weeks (Apr 25 – May 6)
- EIC Beam-Beam project: For different configurations, testing the dynamic status of HSR (JLEIC) by using Bmad.

Isurumali Neththikumara
Previous two weeks (Apr 11 – Apr 22)

- Figured out why the beta-peak suppression is not feasible anymore in arc 6, need to change initial horizontal alpha value compromising the optimized solution
- Carried out a sensitivity study for this comparing the multi-pass linacs. No suitable values were found yet
- Attended the virtual "Matpotlib Workshop" organized by the HSF group
- Attend ODU colloquium virtual & in-person

Next two weeks (Apr 25 – May 6)
- Continue working of possible beta peak suppression methods.
- Try to figure out a way to translate OptiM decks to elegant.
- Figure out how OptiM to Madx inbuilt translation works for sector bends and debug the translated Madx source file.

Dennis Turner
Previous two weeks (Apr 11 – Apr 22)
- AI FOA
  - Code cleanup and documentation
  - More data labeling
  - Presented progress to the AI FOA group and received much advice on how to proceed with model development
  - Started work on a GUI interface for Ops to visualize results from the anomaly detection model
- FFA LDRD
  - Attended intro meeting, got charge code, etc.
  - Installed BMAD and started reading the documentation and tutorials
- AIPINJ
  - Revisited Wien matching. Working on a new test plan for when the 0I02 harp and YAG viewer are re-installed
  - Updated PREINJ elegant deck to properly reflect counterwound solenoids and committed to SVN
- Elegant2ced
  - Continued development and debugging
- Ced2elegant
  - Re-fixed a bug that crept back in somehow
- UITF
  - Updated elegant deck to reflect counterwound solenoids and posted to the UITF wiki
  - Work on contribution to UITF paper regarding elegant, optics measurements, etc
- 12GeB PRAB paper
  - Geoff asked for screenshots and more details for the section on pathlength correction
- Attended 0800, BTeam, AI FOA, PPB, FFA LDRD, LCLS-II commissioning, UITF meetings

Next two weeks (Apr 25 – May 6)
- AI FOA
  - Continued work on the Ops GUI. Explored using ONNX runtime or libtorch for the interface
- Ops
  - Familiarized Mike Merz with the MCC KeyWatcher software so he can take over KeyWatcher management
- FFA LDRD

- Installed BMAD software and started going through the online tutorial
- PPB
  - Agreed to help with beam measurements for Amy Sy's degraded electrons LDRD
- Completed CST001 Cyber Security Training
- Picked up repaired laptop from the Computer Center
- LCLS-II
  - Work with Yuantao Ding to work out access problems with commissioning documents hosted on SLAC's SharePoint.
- AIPINJ
  - Submitted beam test plans to take advantage of the IHA0I02 harp getting repaired earlier than expected
- My upstairs neighbor's water heater broke and flooded into my condo. My heat pump also stopped working. I had to take some vacation time to deal with all of that.
- Attended 0800, BTeam, AI FOA, PPB, FFA LDRD, LCLS-II commissioning, UITF meetings

He Zhang
Previous two weeks (Apr 11 – Apr 22)
- Found and fixed a bug in JSPEC in using the particle model to simulate IBS Effect when dispersion exists
- Did cooling simulations for the dual ring cooler. Now cooling is working as expected after the bug is fixed
- Working on an example of pyJSPEC working together with BMAD
- Writing on JSPEC IBS calculation
Next two weeks (Apr 25 – May 6)
- Finish the example of pyJSPEC working together with BMAD
- Finish the GA code and present the result
- Read papers on reinforment learning
- Continue writing on how JSPEC carries out IBS rate calculation
- Continue writing the FMM paper
- Write IPAC paper

Diagnostic Development - Kevin Jordan

Kevin Jordan
Previous two weeks (Apr 11 – Apr 22)
- Worked on clearing my property list – one outstanding item; this was added to my list this year but I did not see it since the move from the Arc Lab
- Working a few diagnostic opportunities…
Next two weeks (Apr 25 – May 6)
- Working a few diagnostic opportunities…

Joe Gubeli
Previous two weeks (Apr 11 – Apr 22)

- <u>ARDDOT</u> **-** A large portion of these last two weeks was devoted to working on the Chopper RF feedthrough. I model the existing broken feedthrough and designed several versions of a simpler assembly for discussion with various groups. We decided on a final version and I worked with the Machine Shop and our Brazing folks to optimize the design. The assembly is now in it's final machining stage after that it will have some welding performed and then the final brazing step. We anticipate it will ready for testing next Tuesday. Spent some time with Amy S. and Jack M. on the Laser Particle Counter (LPC). We ran some experiments and have a good game plan for future testing.

Next two weeks (Apr 22 – May 6)
- <u>ARDDOT</u> – Work on the LPC & CEBAF diagnostics

Michael Tiefenback
Previous two weeks (Apr 11 – Apr 22)
-

Next two weeks (Apr 25 – May 6)
-

CASA Fellows

LERF - Steve Benson
Previous two weeks (Apr 11 – Apr 22)
- Reviewed magnetized beam paper
- Made travel reservations for ARIEL workshop
- Reviewed OUO materials to look for what we have to get rid of
- Reviewed IPAC paper
- Put together package of LERF information for Xlight team
- Finished writing up SRF needs for the ERLs
- Got use training up-to-date for a couple of users

Next two weeks (Apr 25 – May 6)
- Develop statement of work for shielding calculations
- Work on cleaning out office
- Complete and send in quarterly report for FOA program
- Update ODH OSPs for User Lab 1
- Update training materials for User Lab 4 users
- Modify training for LERF Safety awareness
- Rewrite and submit the LOSP for User Lab 4
- Review medium risk items for Sensitive technology disposition
- Start JPMQ CAM training
- Finish up harmonic RF tech. note

Andrew Hutton
Previous two weeks (Apr 11 – Apr 22)
- <u>ERL Panel:</u> I am pushing Max Bruker to complete the last couple of references in the long ERL paper and then I want to submit to a Journal. We have made a command decision to send the

paper to JHEP. That is free for open access and they accept long manuscripts. It also is compatible with the present formatting (single column), unlike PRAB (two column).

- Loida: continue working on the ERL paper and Loida's paper. Loida did not get student funding for travel to IPAC. I have applied for funding from the JSA IF program "Junior Scientist Travel Support" managed by Justin Stevens. That didn't work work, so I pulled the paper and we will submit it to NAPAC in Albuquerque. I have also asked the MYRRHA Isotope Workshop to invite her to speak, and for that she will calculate the isotope production pathways possible with 100 MeV protons (the energy of the MYRRHA Injector). To complete all this this, Loida will continue to work with me during the summer at ~25% of her time. I feel really bad because I cannot pay her for her time.
- AccApp'2023: Ganapati made a proposal to Andrei that Jefferson Lab host this and that I should be a part of the LOC. Not sure if this will go through, but at least Stuart and Andrei were supportive. I contacted Phil Cole about this, he has been the general Chair of the conference for many, many years. He is up for election at ANS and preferred to wait until the results are known before moving forward.

Next two weeks (Apr 25 – May 6)

- VCU: I attended a meeting of the Industrial Advisory Board of the VCU Mechanical and Nuclear Engineering Departments. I always enjoy this, particularly when we get to talk with some of the students. The Department has made a leap forward in the ratings, up to 78th from 124th, overtaking ODU. Their next focus is to increase the grants to the Department, currently at about $3.5M. It should be at least twice that.
- Ghost Collider: I have returned to working on the Ghost Collider with interactions with Kaoru Yokoya. He had concerns, which made me go back and check up on the details. I continue to believe this is a viable proposal - but probably not cost effective.
- PERLE: I contacted Stuart again about the ICRADA; he assured me that he brings it up at every meeting he has with Tim Hallman and expects that it will eventually get signed. Your government at work!
- Maggie: I have not yet talked to my summer student; she will start the Tuesday after Memorial Day, but is in the middle of exams right now.
- Reminder: I will be on vacation for the last half of May (Mexico).