JANUARY 6, 2022 REPORT | DEC 20 – JAN 14

DIRECTOR: TODD SATOGATA

Todd Satogata

Previous two weeks (Dec 20 - Dec 31)

- Vacation and Holidays

Next two weeks (Jan 3 – Jan 14)

- EIC Meetings (management, RF, crab cooling, impedance team, R&D, beam-beam)
- EIC Management training (Jan 5-7), Pre-ops risk update (Jan 7)
- EIC BNL Meetings (Ferdinand and L2s, Design/R&D leadership)
- MGMT Meetings (Leadership/Dept Heads, CASA coffee), P&C (Jan 11)
- MGMT Finalize appraisals, review of IPAC'22 abstracts
- ADMIN Ghost collider advisory meeting (Andrew, Jan 10)
- ADMIN IPAC'24 advice (Jan 10), IPAC'22 abstract help (Jan 7)
- ADMIN APS Education/outreach committee planning, Jan meet (Jan 14)
- PERS Doctor appt (AM Jan 12)

Alex Bogacz

Previous two weeks (Dec 20 - Dec 31)

- USPAS course preparation
- JINST paper review
- NuFact'22 SPC mtg
- FFA@CEBAF task planning and prioritization
- Vacation, shutdown

Next two weeks (Jan 3 – Jan 14)

- Presentation at PERLE Collaboration mtg
- B-Team, Ops meetings
- FFA@CEBAF collaborative work
- USPAS course preparation
- Grad. Student Steering Committee – New student review
- Contributing to paper on PERLE

Ryan Bodenstein

Previous two weeks (Dec 20 - Dec 31)

- Operations meetings
- B-Team meetings
- None in this time period
- FFA@CEBAF collab work
- Will do tunnel tour with Jay for some photos to get better idea of separation region for FFAs
- Positron/FFA liaison work
- None in this time period
- Student Guidance
- Met with Alex to make sure he's ok until January
- Update/refresh expiring training
- Up to date, minus Halls C and D, as well as the parts of MAC training that are no longer offered.
- LDRD work
- Recruiting online – reached out to more colleagues/places
- Learning BMAD

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- Created LDRD SharePoint for management of goals, documentation, etc.…
- IPAC Abstract work
- Christmas break!

Next two weeks (Jan 3 – Jan 14)

- Operations meetings
- B-Team meetings
- FFA@CEBAF collab work
- Positron/FFA liaison work
- Student Guidance
- Update/refresh expiring training
- Up to date, minus Halls C and D, as well as the parts of MAC training that are no longer offered.
- LDRD work
- Q1 Report to Leigh
- Setting up short-term action plan
- Preparing for interviews of 2 candidates
- IPAC Abstract

Rui Li

Previous two weeks (Dec 20 - Dec 31)

- Vacation and holidays

Next two weeks (Jan 3 – Jan 14)

- Communicate with Mike Blaskiewicz about the sign difference for coherent tune shift in the TCBI calculation, and find out that his wakefield sign convention used in the CDR is different from the one I used according to Alex Chao's book.
- Redo the TCBI calculation for correcting the earlier sign mistake

Edy Nissen

Previous two weeks (Dec 20 - Dec 31)

- On vacation

Next two weeks (Jan 3 – Jan 14)

- Submitted IPAC abstracts
- Attended Bteam meeting
- Partial sick days 1/4 and 1/5 Cold-like symptoms, I was unable to get a test so I am following isolation protocols.
- Working to find cheaper magnets for ECA. If I can't find a good lead by COB Friday the 7th I just won't submit the application. Without significant cost savings this is a waste of time.
- On Wednesday the 12th I will be having a zoom meeting with someone at LUNA lab at INFN about possible fusion based applications for the type of co-moving collisions that have been used with DODGE.

Chris Tennant

Previous two weeks (Dec 20 - Dec 31)

- Vacation/shutdown

Next two weeks (Jan 3 – Jan 14)

- RADSMA: getting CRADA through, data exploration, cleaning, and pre-processing of retrieved 2021 data, initial deep learning (inverse) models trained and tested
- AIFOA1: quarterly, evaluating potential graduate students, progress meetings, exploratory analysis of C100 scope-mode data
- LD2202: literature review of contrastive learning, quarterly reporting, work to get UVA graduate student supported
- JLab training
- Frontiers in Artificial Intelligence paper published
- Work on "AI in the Accelerator Division" White Paper
- Work on mobile diagnostic proposal: budget, working with RadCon to identify sensors/measurements, brainstorming, draft proposal
- Invited participant at two AI@DOE Roundtable Workshops (January 12, 14)

Accelerator R & D - Yuhong Zhang

Yuhong Zhang

Previous two weeks (Dec 20 - Dec 31)

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Next two weeks (Jan 3 – Jan 14)

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Kirsten Deitrick

Previous two weeks (Dec 20 - Dec 31)

- Continued fixing LiTrack
- Looking at compressor references (for SHC ERL)
- Booster side effects
- Holiday

Next two weeks (Jan 3 – Jan 14)

- LiTrack now functional
- Bunch compressor reading / begin modeling
- Begin translating ERL from BMAD into elegant for microbunching gain calculations
- Begin looking at ERL for lower energy configuration

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Bhawin Dhital

Previous two weeks (Dec 20 - Dec 31)

- Writing a summary paper on "Dual Energy Storage Ring Cooler"
- Prepared and submitted 2 abstracts for IPAC2022 in JLab internal system.

Next two weeks (Jan 3 – Jan 14)

- Will update and complete AccApp21 paper. Due date for submission is Jan 05, 2022.
- Will continue writing a summary paper on a dual energy storage ring (PRAB journal paper)
- Will work on Thesis writing
- Further lattice optimization of the ring

Amy Sy

Previous two weeks (Dec 20 - Dec 31)

- FMLA

Next two weeks (Jan 3 – Jan 14)

- FMLA

Computational Physics - Yves Roblin

Yves Roblin

Previous two weeks (Dec 20 - Dec 31)

- Vacation

Next two weeks (Jan 3 – Jan 14)

- Optics on call
- Machine restart, BTEAM coordination
- Moller beamline updates/optimization
- Procedural development for upcoming Hall A He3 experiment
- ERR report for GEN
- Book chapter writing/revisions
- Staff evaluation meetings
- Preparing talk for Hall A winter meeting

Randi Gamage

Previous two weeks (Dec 20 - Dec 31)

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Next two weeks (Jan 3 – Jan 14)

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River Huang

Previous two weeks (Dec 20 - Dec 31)

- Holidays break

Next two weeks (Jan 3 – Jan 14)

- EIC Beam-Beam project: Study the relations between the emittance growth rate and the noise level.

Isurumali Neththikumara

Previous two weeks (Dec 20 - Dec 31)

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Next two weeks (Jan 3 – Jan 14)

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Dennis Turner

Previous two weeks (Dec 20 - Dec 31)

- Signed RWPs
- Completed ESC007 LOTO Training
- Winter break

Next two weeks (Jan 3 – Jan 14)

- **HLA**
  - Modified cedelegant, cs2sdds, elegant2ued to handle counterwound solenoids
  - Continue debugging and testing elegant2ced
  - Improvements and feature development for the rayTrace data analyzer
- **AI**
  - Collect and label new archiver data with input from Clyde and others
  - Read literature on autoencoders to apply to RF cavity data
  - Develop new model for RF data using autoencoder
- **UITF**
  - Collect optics and model data for upcoming paper
- Completed GEN101 Standards of Conduct training
- Completed Physics Work Governance training
- Optics On-Call
  - Assist with CEBAF startup
- Attend 0745, 0800, BTeam, AI FOA, UITF meetings

He Zhang

Previous two weeks (Dec 20 - Dec 31)

- On vacation most of the time
- Installed BlonD and ran a few tests
- Continued RF data processing

Next two weeks (Jan 3 – Jan 14)

- Submit IPAC abstract
- Learn more about BlonD
- Continue RF data processing
- Finish the FMM paper
- Continue the python JSPEC

Diagnostic Development - Kevin Jordan

Kevin Jordan

Previous two weeks (Dec 20 - Dec 31)

- Completed preliminary controls for operating the 75kWatt magnetron transmitter. We have run up the power now need to recheck scaling calibrations & automate turn-on.
- Continued to participate in IBIC organizing meetings as well as updates to Faraday Cup award.
- Finishing up review of DOE SBIR phase II proposal for Electron Cloud Monitor.
- Completed required training & OSPs for operating the magnetron

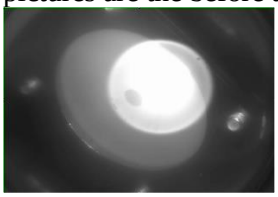
Next two weeks (Jan 3 – Jan 14)

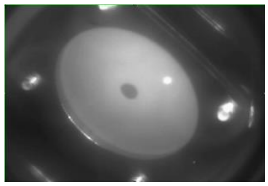
- Continue with magnetron work
- Continue with IBIC organizing
- Finish SBIR review

Joe Gubeli

Previous two weeks (Dec 20 - Dec 31)

- **ARDDOT**
  - Took advantage of the CEBAF maintenance day to install a short pass filter on one of the new imagers. OPS reported that the filters vastly improve the image quality. The next two pictures are the before and after filter installation.





  - One concern we have with the Laser Particle Counter (LPC) is how will it work in a radiation environment. OmniSensing (OS) ordered a smaller optical head consisting of the lens and eight short fiber optic cables. The final optical head will consist of 32 channels. The optical head is what is mounted to a flange near the cryomodule with the rest of the hardware in a service building. OS received the sample on Monday, tested its performance as a baseline and then

overnight shipped it to us that night. I received the sample placed and placed it in the tunnel between cryomodules NL21 and NL22 15 minutes before the tunnel lockup. Next two images show the optical head and it sitting on the girder.

- Vacation/Holiday – lots of days off

Next two weeks (Jan 3 – Jan 14)

- ARDDOT – Continue working on viewer/harp design

Michael Tiefenback

Previous two weeks (Dec 20 - Dec 31)

- -

Next two weeks (Jan 3 – Jan 14)

- -

CASA Fellows

LERF - Steve Benson

Previous two weeks (Dec 20 - Dec 31)

- Reviewed PRAB paper
- Evaluated methods of including pre-cooling ERL into the SHC ERL
- Merry Christmas!

Next two weeks (Jan 3 – Jan 14)

- Review SBIR proposals
- Attend Project Management training
- Finish up harmonic RF tech. note

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Andrew Hutton

Previous two weeks (Dec 20 - Dec 31)

- Isotopes: Loida has agreed to continue working with me for the next semester (thanks to Balša for additional funding). We discussed her future work which will be to evaluate all of the cascade
- reactions that can produce the isotopes of interest to the DOE. I have asked whether she would like to return next summer as a SULI student; I asked for a response after the holidays.
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- ALCC meeting: The news from Japan is dire, and the DOE has stated that they will no longer be providing input to the Japanese government, but will wait to be asked for input. The death spasms continue! The ALCC is now considering supporting any kind of e+e- collider - even circular!
- ERLs: I have been in a super excited state developing a new idea for a high energy e+e- collider. It involves "ghost bunches" with equal numbers of electrons and positrons in the linac as well as in the interaction region. To first order, this would eliminate HOMs, BBU, beam-beam and disruption effects. I have a credible scenario that, while probably too expensive to build, can serve as a basis for addressing a number of outstanding questions such as: what limits the maximum number of particles in the bunches and the luminosity, when all of the standard effects are eliminated. Has keeps me awake at night even during the holidays!

Next two weeks (Jan 3 – Jan 14)

- Isotopes: I start back with regular meetings with Loida every Friday morning. The goal is to link Lila's program and Loida's program to get all of the possible cascade reactions leading to the radioisotopes on the DOE list. This would then become a reviewed paper. I started to wonder about longevity - making the program available to others. I contacted Adam Stavola who agreed to be the "host" and it will be available on one of the RadCon toolbox sites. I discussed the possibility of him taking a summer student to make a web browser "wrapper" for the integrated programs, and he was favorable to the idea.
- ERLs: I have made progress on the "ghost" collider and will have a first Q&A with CASA staff on Monday January 10 to identify problems I have not yet envisaged. I realized last night that a low energy test facility would not be out of the question. The super-excited state persists!
- PERLE: There is a (remote) Collaboration Workshop on Tuesday and Wednesday January 11&12, where Alex Bogacz and Bob Rimmer are scheduled to present. So, Jefferson Lab continues to be well represented, although the DOE has yet to sign the ICRADA.
- ALCC: On January 10, Thomas Roser will present the status and plans for the ALCC the Accelerator Frontier Implementation Task Force. This has been set up in preparation for the Snowmass P5 process.
- ERL Panel: we will finalize the ~250 page long report for publication in the next weeks. I have not heard whether the integrated report of all the panels has been released for publication. I understand that the panel is now expected to work with the various funding agencies to develop an implementation plan, but I don't know the details.