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DIRECTOR: TODD SATOGATA

Todd Satogata

Previous 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)

Next two weeks (Jan 17 – Jan 28)

- EIC Meetings (management, RF, crab cooling, impedance team, R&D, beam-beam)
- EIC Cost/schedule planning, kickoff meetings (Jan 25, 27)
- EIC BNL Meetings (Ferdinand and L2s, Design/R&D leadership)
- MGMT Meetings (Leadership/Dept Heads, CASA coffee)
- MGMT PEMP FY22 Q1 EIC update for division office
- 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 notes, meeting follow up; training
- ODU Prep JUAS lecture (Fri Jan 21); give lecture (Mon Jan 24)
- Holiday (Mon Jan 17)
- PERS Doctor appt (AM Jan 19)

Alex Bogacz

Previous 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

Next two weeks (Jan 17 – Jan 28)

- USPAS course preparation and teaching
- Post-doc interviews
- FFA@CEBAF collaborative work
- B-Team, Ops meetings
- Preparing Grad. Student Annual Review
- Meetings on PERLE lattice with GSI and IJCLAB post-docs

Ryan Bodenstein

Previous two weeks (Jan 3 – Jan 14)

- Operations meetings
- B-Team meetings
- FFA@CEBAF collab work
- Positron/FFA liaison work

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- 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 work

Next two weeks (Jan 17 – Jan 28)

- Operations meetings
- B-Team meetings
- FFA@CEBAF collab work
- Positron/FFA liaison work
- Student Guidance
- LDRD work
    - Interviewing 2 candidates
    - "Recruited" an operator to work with us
- Program Deputy

Rui Li

Previous 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

Next two weeks (Jan 17 – Jan 28)

- Sign correction for the transverse wake for the TCBI/CBB study
    - My mathematica TCBI calculation shows that with the sign change for the transverse wake, our previous used simplified model (one-bunch-in-each-ring and exponential transverse wake) is not enough to describe the new TCBI growth.
    - The simplified model needs at least 5 or 10 bunches in each ring, as a newer simplified version of 1260 bunches in the eSR. This newer version requires some change in my coding. I reviewed all my approaches and data processing, and am planning to make this change.
    - This change is something I always wish I get some time to do. Because if the nonlinear beam-beam causes any coupling between different coupled-bunch modes, the previous over-simplified one-bunch-in-each-ring model cannot capture it. Now with this new change, this part of physics should be better captured.
- Discussions about collective effects in Andrew Hutton's ghost collider
    - Slava suggested Andrew to send his presentation to me and let me look at the collective instabilities
    - I went through Andrew's slide and had multiple email discussions with Andrew about challenges and implications from collective-effects point of view
    - This is an on-going process since I'm slow at digesting and appreciating the design concepts and the challenges therein...

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Edy Nissen

Previous two weeks (Jan 3 – Jan 14)

- Attended required ops/bteam meetings
- Attend EIC beam-beam and RCA meetings
- Worked on cost reduction for ECA Application, as well as the application itself
- Had meeting with INFN LUNA lab members on the 12th about a potential machine design that could be used to study fusion reactions with different charge states, which according to them is something of interest.

Next two weeks (Jan 7 – Jan 28)

- Attended required ops/bteam meetings
- Attended EIC beam-beam and RCA meetings
- Finished ECA budget and narrative update, waiting on approvals, will submit on time on the 20th
- Attended Hall D beam line working group
- Will work on reviewer requested changes for DODGE NIM paper

Chris Tennant

Previous 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)

Next two weeks (Jan 17 – Jan 28)

- RADSMA: explore data gathered from dedicated beam studies, prepare for testing with trained model
- AIFOA1: onboarding new ODU graduate student, cleaning C100 scope mode data and understanding how to do normalization properlyLD2202: literature review of contrastive learning, quarterly reporting, work to get UVA graduate student supported
- LD2202: resolving issue with vacuum PV units in the injector, meetings with UVA
- Employee/supervisor meeting for evaluations and expectations
- Participate in ASCR Visualization workshop

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Accelerator R & D - Yuhong Zhang

Yuhong Zhang

Previous two weeks (Jan 3 – Jan 14)

-

Next two weeks (Jan 17 – Jan 28)

-

Kirsten Deitrick

Previous 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 (linac optics, stretcher / compressor)
- Meetings: Coffee, BTEam, JLab EIC, EIC Weekly, EIC Coffee, Strong Hadron Cooling, EIC Cooler Lattice, FFA@CEBAF

Next two weeks (Jan 17 – Jan 28)

- USPAS (Colliders for High Energy and Nuclear Physics) starts Jan 24
- Continue ERL microbunching gain calculations
- Continue lower energy configuration for ERL (linac optics, stretcher / compressor)
- Meetings: Coffee, BTEam, JLab EIC, EIC Weekly, EIC Coffee, Strong Hadron Cooling, EIC Cooler Lattice, FFA@CEBAF

Bhawin Dhital

Previous two weeks (Jan 3 – Jan 14)

- Writing a summary paper and working on thesis
- Prepared and submitted 2 abstracts for IPAC2022 in JLab internal system.

Next two weeks (Jan 17 – Jan 28)

- Will continue writing a summary paper and a thesis on a dual energy storage ring
- Will be working on the new lattice, calculation of the parameters and beam dynamics study
- Further lattice optimization of the ring

Amy Sy

Previous two weeks (Jan 3 – Jan 14)

- FMLA

Next two weeks (Jan 17 – Jan 28)

- FMLA

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Computational Physics - Yves Roblin

Yves Roblin

Previous 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

Next two weeks (Jan 17 – Jan 28)

- TRC committee meetings + reading/evaluations
- Preparing talk for Hall A winter meeting
- BTEAM coordination
- Hall A optics development for Phase 1 deployment of Moller optics
- CEBAF model work, optimization/evaluation of extraction locks
- CEBAF model, audit of optics, renaming of elements, coordination with CED people.

Randi Gamage

Previous two weeks (Jan 3 – Jan 14)

- IPAC22 Abstracts
- Move the snake in in IR8 to match 'closer' to IR2 (still off by ~7mrad).
- Design non colliding IR8 optics
- CEBAF FFA arc match in bmad

Next two weeks (Jan 17 – Jan 28)

- IR8 collision optics cleanup and send to Scott
- Non colliding IR8 optics
- CEBAF FFA arc match in bmad
- USPAS22

River Huang

Previous two weeks (Jan 3 – Jan 14)

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

Next two weeks (Jan 17 – Jan 28)

- Continue working on EIC Beam-Beam project

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Isurumali Neththikumara

Previous two weeks (Jan 3 – Jan 14)

-

Next two weeks (Jan 17 – Jan 28)

-

Dennis Turner

Previous two weeks (Jan 3 – Jan 14)

- **HLA**
  - Modified cedelegant, cs2sdds, elegant2ued to handle counterwound solenoids
  - Modify elegant2ced 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 and 1L02 BLM trips
- **AIPINJ**
  - Met with Marcy to discuss IYG0I02 viewer flag alignment
- **Ops procedures**
  - Submitted changes to Aperture Scan procedure to Tom
- Attend 0745, 0800, BTeam, AI FOA, UITF meetings

Next two weeks (Jan 17 – Jan 28)

- **LCLS-II**
  - Completed cybersecurity training
  - Started process to get a UNIX account at SLAC
- **AI**
  - Continued harvesting and labeling C25/C50 archived data
  - Continued AI model development
  - Select a student to assist
- **UITF**
  - Contribute to upcoming paper
  - Modify deck and UED to account for new Wien filter and Wien quads
- Discussed and signed performance evaluation
- Talked with Pam about sitting on the interview panel for a new LLAPPS developer.
- Tweaks to elegant2ced, ced2elegant, cs2sdds, qsUtility, mostly regarding counterwound sol$
- Data mine transport line matching vs. Lambertson configurations to find any useful trends

- Complete Electrical Worker training
- Attend 0800, BTeam, AI FOA, UITF meetings

He Zhang

Previous two weeks (Jan 3 – Jan 14)

- IPAC abstract submitted
- Continued RF data processing
- pyJSPEC: all formulas and features on IBS rate calculation finished and tested.

Next two weeks (Jan 17 – Jan 28)

- Write a note on how JSPEC carries out IBS rate calculation
- Continue studying BlonD and longitudinal dynamics
- Continue RF data processing
- Continue writing the FMM paper
- Continue the python JSPEC

Diagnostic Development - Kevin Jordan

Kevin Jordan

Previous two weeks (Jan 3 – Jan 14)

- I finished a review of a SBIR II for an electron cloud monitor
- Work continues on characterizing the magnetron transmitter
- Began discussions with Chris Tennant on outfitting a remote autonomous robot to gather with an instrument package to "pre-survey" accelerator tunnel. I brought in Joe & Tief to the team as well. It is being done jointly w/CNU.
- Trying to get Chopard to update the Faraday-Cup website. The IBIC PC meeting will be held virtually this year again ☹
- Wrote draft CRADA for the Helium Mass Flow SBIR. This was awarded to George Biallas' company (SBIR Phase 1)
- Completed appraisals & attended meetings…

Next two weeks (Jan 17 – Jan 28)

- More effort on IBIC conference preparation including Faraday cup award. I am overdue with citation for last years winner - first draft of poster from art folks at lab was unacceptable… its on me to give better guidance on artwork…
- Complete CRADA for SBIR (wish me luck on getting that processed 8-)
- Continue to characterize magnetron transmitter. This includes developing an algorithm & programming solenoid & filament current control output power. Next is to write an OSP for normal operation as opposed to commissioning. Just a side note; Haipeng was able to go in & turn on the transmitter by himself - following the OSP; my interface works very well & makes it easy.

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Joe Gubeli

Previous two weeks (Jan 3 – Jan 14)

- **ARDDOT -** Working on Zemax model of the ARC 7 SLMs. This is in an attempt to figure out the source of a second spot that is showing up on the cameras. Working with RADCON on a dosimeter rack design. Did some research on FLIR cameras for a proposal. Worked some on a combo viewer/harp design.

Next two weeks (Jan 17 – Jan 28)

- ARDDOT – Continue working on viewer/harp design, Zemax and dosimeter rack.

Michael Tiefenback

Previous two weeks (Jan 3 – Jan 14)

- **-**

Next two weeks (Jan 17 – Jan 28)

- **-**

CASA Fellows

LERF - Steve Benson

Previous two weeks (Jan 3 – Jan 14)

- Reviewed SBIR proposals
- Attend Project Management training for EIC
- Reviewed many IPAC22 abstracts
- Attended meeting for ERL radiation shielding planning
- Worked on developing AWPs for the electron cooling FOA accounts

Next two weeks (Jan 17 – Jan 28)

- Review requirements documents for SHC ERL
- Complete review of SBIR proposals
- Prepare presentation for SHC review and dry run it
- Prepare quarterly report for Electron Cooling FOA contracts
- Rewrite and submit the LOSP for User Lab 4
- Update training for User Lab 4 users
- Set up second SPC meeting for ERL 2022

Andrew Hutton

Previous two weeks (Jan 3 – Jan 14)

- Isotopes: I started 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.

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- PERLE: There was a (remote) Collaboration Workshop on Tuesday and Wednesday January 11&12, where Alex Bogacz and Bob Rimmer presented and I chaired the opening session. Jefferson Lab continues to be well represented, although the DOE has yet to sign the ICRADA.
- ALCC: On January 10, Thomas Roser presented 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. They are collecting information in a large spreadsheet of all of the possible proposals (not including the Ghost Collider). He reported that they did not have any input on LHeC, which I reported back to Europe and the spreadsheet will be filled out and a White paper delivered.
- 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.
- VNECA: I was contacted over the holidays by April Wade from the Commonwealth Department of Energy to discuss the Virginia Innovative Nuclear Hub (VIN Hub) with members of the management team. A study to flesh out the Hub concept was approved by the Virginia Legislature last summer with funding of $100k. There is now a draft description of the Hub, which I am attaching. I met via Zoom with April Wade (Energy), Alireza Haghighat (VT), Supathorn Phongikaroon (VCU), and Mark Horstmeyer (Liberty) to discuss how Jefferson Lab could be integrated into the HUB. Of specific interest to me was the ADMIRE proposal (ADMIRE = Accelerator Driven Micro Reactor). After the meeting, Alireza sent me a draft of the ADMIRE proposal, which I am also attaching. They would really like Jefferson Lab to be a part of this proposal. I forwarded the request to Stuart and a meeting has been set up between Stuart, the proponents of the Hub and me for January 31.

Next two weeks (Jan 17 – Jan 28)

- ERL Panel: The ERL Roadmap has now been put on arXiv; it will be announced on Friday January 21 at 1 pm CET (9:00 am EST). We are now on a push to have the long ERL write up complete in the next few weeks and I will be spending most of my time over the next few weeks writing up the remaining sections (writing several section introductions, finishing the incomplete sustainability section and coming up with the overall conclusions). Max B. is a great help in this.
- I continue to cogitate over the Ghost Collider and have made a couple of breakthroughs. Slava and Rui Li have been in contact with me and this has been really helpful in focusing my thoughts. I convinced myself that the decelerated bean has effectively the same current as the accelerated beam leading to excellent energy recovery. I am getting close to being able to identify the major possible instabilities, but am not yet able to come up with a logical path that would enable me to optimize the luminosity.
- Loida and Lila: Loida is making progress on the integration of Lila's and Loida's programs. Adam Stavola is chasing a permanent repository. Loida has submitted an Abstract to IPAC'2022 and has requested student travel support. She has already been invited to interview for the graduate program at Temple, and I have been preparing her for the interview. Lila also has received her first PhD offer from the University of Tennessee Nuclear Engineering and has interviews set up for UCLA, WashU and UW-Madison. They are both preparing to launch!