TRIUMF

Particle Physics Faculty Meeting

- Agenda
  - News/Update
  - Round table

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ALPHA BAE Hire

- Rodrigo Lage Sacramento (U. Rio de Janeiro) has accepted the TRIUMF offer
- Expected start date August 1st

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ACOT

- We received the ACOT report from the October meeting. There is one recommendation following from the PP+SciTec+SciComp parallel session:
- “Continue to monitor development of future projects and make strategic decisions based on human resources and expertise to maximize impacts.”

- FYI, from the report:
- “The ACOT is pleased to see that science drivers, infrastructure and staffing needs have already been discussed; and new initiatives discussed in dedicated task forces will provide a short report as input to the division. The ACOT congratulates the team for making good progress in staffing. A BAE hire has been made for Hyper-K, a former BAE on Hyper-K became a TRIUMF Affiliate Scientist, and interviews for an ALPHA BAE hire have been completed. In addition, a CNC machinist has been hired. The next step is to hire a technician for UCN. A BAE/A&P hire will be requested in the next 5-Year Plan.”

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Peer Review Committee

- From Petr:
- I would like to thank all who participated in the PRC preparations and execution: speakers, conveners, poster presenters, tour presenters, those who were helping in any way. The Leadership Team received a very positive feedback from the PRC members, highlights from the report draft that were shared were overall quite favorable.

- As I do not want to accidentally leave out anybody, please share the above with your departments.
- It was also pointed out that the PRC members really enjoyed the poster session and appreciated the enthusiasm and engagement of students! Please distribute the link below to photos that Stu took to the students in your departments who participated.

Poster Session

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Peer Review Committee

- From Director:

PRC Feedback

- Positive answers to all questions they are being asked
- Really supportive of the science programme, recognising we could do even more if we had additional resources; Very complimentary regarding our science and accelerator programmes, our role in national and international programmes, and how we 'punch above our weight'
- Areas for improvement exist. Recognise that we are stretched with resources, need to improve our EDI systems, develop our programme management, research security, tell our story more widely, and reduce substantial oversight load from internal and external stakeholders

Theme(s)	Question for PRC
Scientific Excellence	1. To what extent is TRIUMF a platform for scientific excellence, including in its: a. knowledge creation (e.g., scientific publications, technology development) b. connector role (i.e., extent to which Canada's participation in TRIUMF connected Canada to the world in TRIUMF-related fields) c. infrastructure
Relevance	2. Is TRIUMF focusing on the right areas to stay relevant to the TRIUMF community and beyond?
Capabilities	3. To what extent does TRIUMF have the capacity, competencies and facilities needed to achieve its objectives moving forward?
Governance	4. To what extent is the governance of TRIUMF (e.g., committees, policies, and controls) effective / efficient? Are there any efficiencies to be gained? (taking into account the Canadian environment and system)

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New Initiatives

- Particle Physics Planning results in impact on existing and future experiments and
  - New initiatives under discussion in dedicated task forces
    - Center/platform/hub for detector development (with Science and Technology)
    - Center/platform/hub for AMO/Quantum/Precision/physics (HAICU, radioactive molecules, UCN…), across Particle & Nuclear Physics departments

- A ~2 page summary by end of year
  - Detector development writeup
  - AMO/Quantum/Precision task force meet last week
  - Summary on joint center (include SciComp ML and Theory workshop center)

- Informal discussion with the director seems to indicate that there are considerations that might result that there will be some sort of LOI process TBC…

Particle Physics Holiday Dinner

Particle Physics Holiday Dinner

OC You are the organizer of the group event.

2 hours

All times are in: America/Vancouver (GMT-8:00)

Availabilities — yes | if need be | cannot attend | pending

	DEC 8 THU	DEC 12 MON	DEC 13 TUE	DEC 14 WED	DEC 15 THU
	6:00 PM 8:00 PM	6:00 PM 8:00 PM	6:00 PM 8:00 PM	6:00 PM 8:00 PM	6:00 PM 8:00 PM
Participants	5	8	8	5	4

- Going to be next week, please vote if you plan to join!
- https://doodle.com/meeting/participate/id/dJypNGPb

Happy holidays!

- Shall we reserve a Particle Physics table? Let me know…

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AOB

Round Table

- ATLAS
- T2K/HyperK
- TUCAN
- ALPHA
- SuperCDMS
- DarkLight
- PIONEER
- NA62
- n-EXO / PHAAR
- SNO+
- HALO
- g-2
- Belle 2
- Theory

TUCAN update November 2022 – nEDM PRJ_555

- UK company Magnetic Shields Limited (MSL):
  on-site arrival October 3rd; started assembly & installation of TUCAN nEDM magnetically shielded room (MSR)
- had to halt work early November due to shipment delay; work completed so far protected by plywood & tarp
- Meson hall coordinator Maico Dalla Valle acts as **"prime contractor qualified coordinator"** and performs daily prejob briefings and hazard analysis with MSL team (many thanks!)
- Bill Reichert & OHS developed training for contractor coordinators; enables us to provide continuous supervision to MSL contractors during longer work shifts (evening hours or weekends)
  - Critical, as MSL schedule is based on this (in particular after the occurred 6-week delay)

Meson hall B2 level view from loading bay

TUCAN
TRIUMF Ultra Cold Advanced Neutron source

TUCAN source update Nov 2022 (PRJ_553)

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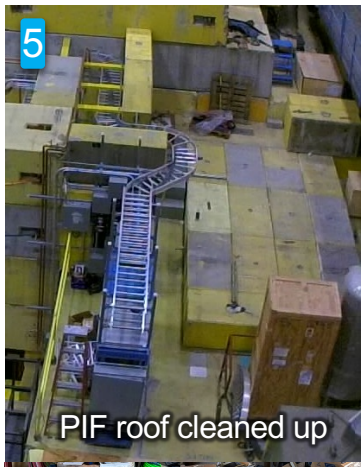
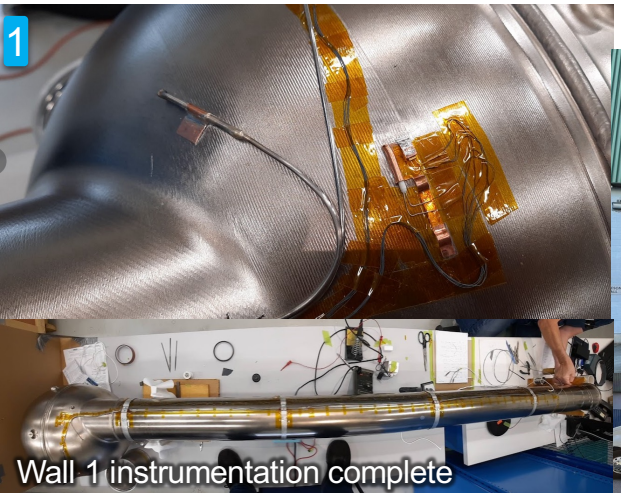
1. tail section wall 1 instrumentation complete
   - next: adding wall 2 (of 6)
2. Large storage tanks for deuterium and isopure helium
   - Tanks have been delivered and installed in place!
3. Cryo connection box
   - welding complete
   - completion delayed further to Jan 2023
4. PIF shielding blocks
   - to mitigate excess radiation in UCN areas
   - pouring has started last week
5. PIF roof cleaned up for shutdown work
   - PIF roof blocks will be lifted for shield block installation inside PIF cave

- Design/construction progress
  - Graphite carrier completed, ready for graphite filling
  - D2O vessel drawings released
  - Detailing ongoing of: cryo connection box internals, LD2 cryostat
- TUCAN Collaboration meeting
  - Jan 5-7 on site at TRIUMF



Thanks to PRJ_553 QRPP priority boost
design and machine shop work is proceeding well!



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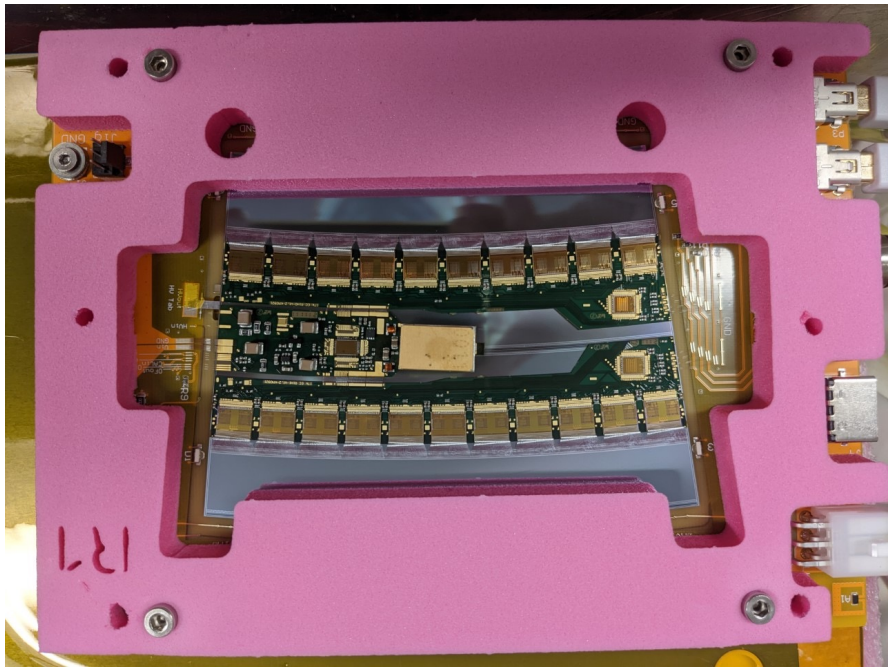
ATLAS Detectors

- TRIUMF ITk group built very first ITk End-Cap pre-production B module (in the world) - and it works!
- ITk - publication of novel sensor characterization technique: L. Poley et al. “Active Region Extent Assessment with X-rays (AREA-X)” 2022 JINST 17 T11009 DOI 10.1088/1748-0221/17/11/T11009
- Final Design Review passed last week for Leonid and Roger's LAr HL-LHC frontend readout preshaper/shaper ASIC HPS2 (in collaboration with UVic)
    - This project also moves to production phase

ITk End-Cap pre-production B module



ATLAS - Physics

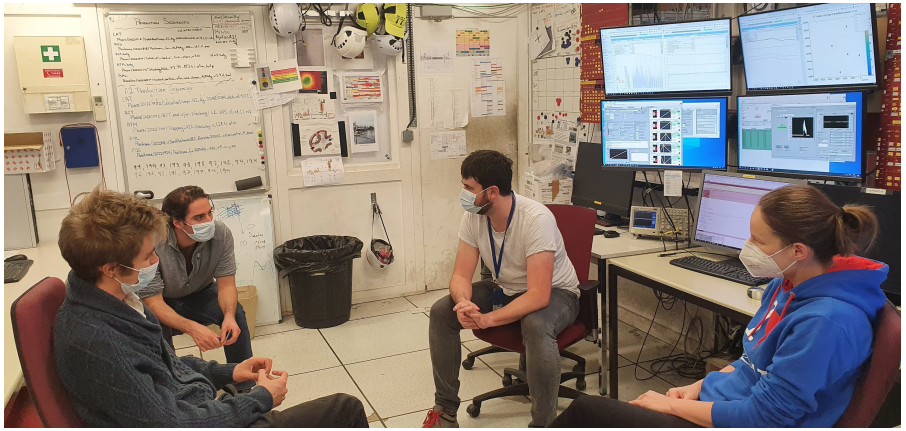
- Full Run 2 SUSY strong production limit paper (Max et al) submitted to journal (arXiv:2211.08028): “Search for supersymmetry in final states with missing transverse momentum and three or more b-jets in 139 fb−1 of proton--proton collisions at √s=13 TeV with the ATLAS detector”
- ATLAS Public Note: “HL-LHC prospects for the measurement of Higgs boson pair production in the $b\bar{b}b\bar{b}$ final state and combination with the $b\bar{b}\gamma\gamma$ and $b\bar{b}\tau^+\tau^-$ final states at the ATLAS experiment” http://cds.cern.ch/record/2841244 from Marco, Max and UBC MSc student C. Sam

Hyper-K

- University of Victoria and KEK have signed the MoU necessary to finalize the award for the CFI-IF project on the Intermediate Water Cherenkov Detector (P461)
- Hosted Polish Hyper-K collaborators on multi-PMT project at TRIUMF over last 2 weeks
  - Significant progress made with face-to-face collaboration!

ALPHA

- Final week of the 6-month beam time at CERN, running ALPHA-g experiment
- CERN beam ended on Nov. 28

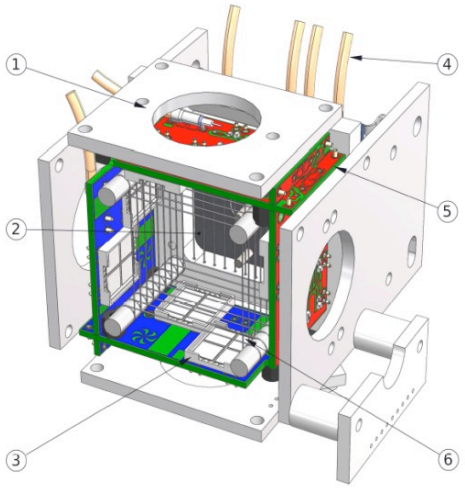


ALPHA students & postdocs

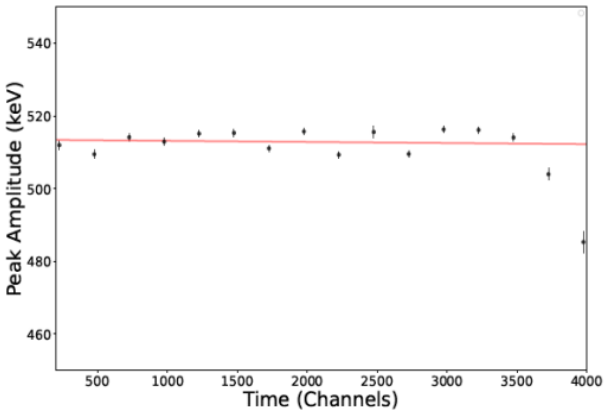
NA62 (Group)

- A paper on the TRIUMF-produced NA62 LKr purity monitor was submitted to NIM (arXiv:2210.16232)
- A paper on the status of the X17 search in Montreal was submitted to the arXiv (arXiv:2211.11900)

LKr TPC



Charge amplitude vs Drift time



Submitted to NIMA arXiv:2210.16232