

Particle Physics Faculty Meeting

- Agenda
 - News
 - Short 5YP priorities talks

Hiring

- **Hyper-K** interviews completed, report and ranked list accepted by director
- Petr is in negotiations with top candidate

- **ALPHA** interviews May 6, 9, 16, 17 and 19
- Any initial feedback?
- Please send comments end of day today to the search committee chair
 - David Lunney lunney@ijclab.in2p3.fr

20YV Document

DRAFT – TRIUMF 20-Year Vision

April 2022

- Deadline was May 6th
- Several people have provided feedback
- Particle Physics Topical Group has met one more time to submit joint comments
- Three main points
 - Strengthen wording around capabilities in detector development – not status quo
 - Specify what is meant by quantum initiative – with examples, focus on sensing
 - Strengthen 1st pillar on Scientific Discovery – inspiration + far reaching impact
 - Strengthen wording on EDI

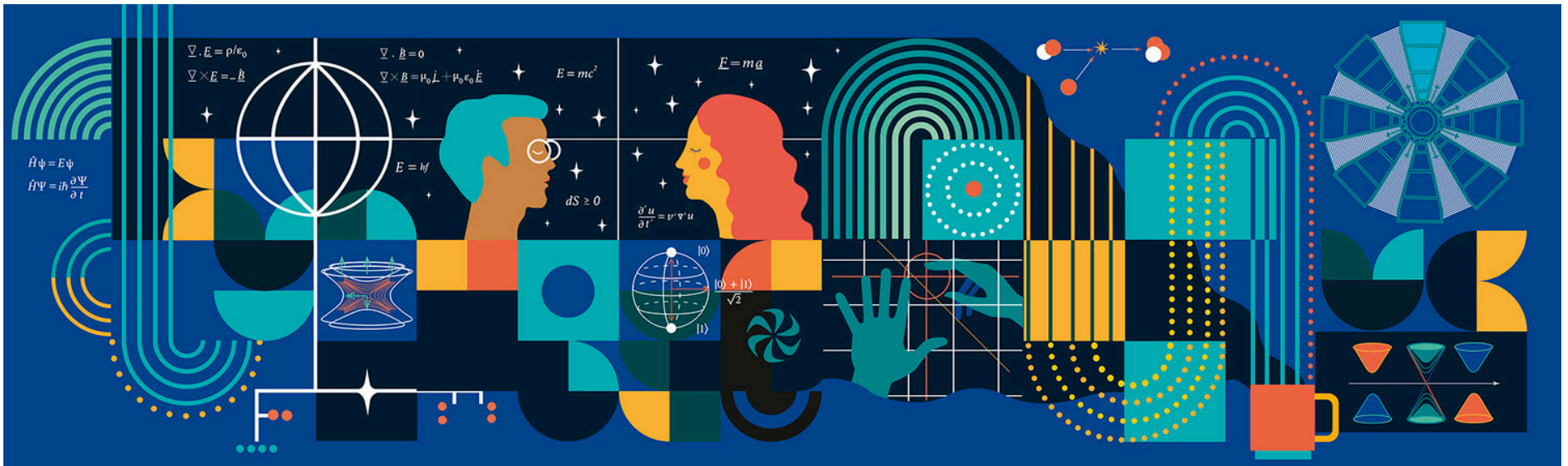
- Reiner: Thank you for the feedback from the particle physics topical group. This is much appreciated and we will consider all comments.

Next 5YP Planning

- [Particle Physics Planning](#) in March and April in preparation for PSD retreat in May / June
- Met with Nuclear Physics and prepared high level slides (see following set) which were discussed at their retreat last week – well received
- Presented them also at the DH/D meeting last week
- Several of us are engaging across departments to find common ground

- Tony Noble is visiting TRIUMF today to discuss new CFREF for Astro-particle Physics
 - Meeting with Akira, Mark, Scott, Fabrice, Matthias...

- Seminar from Michael Doser (CERN, head of Quantum Institute) on May 24th noon



"Quantum Initiative" for a Detector Development & Advanced AMO & Precision Hub/Platform

Particle and Nuclear Physics, Theory, Science & Technology, CMMS

May 2022

Detector Development Platform

- Central goal:
 - Long-term investments in infrastructure and personnel that enhance detector capabilities
 - Leverage and multiply innovation in detector development across Canada
- Also reflected among top priority in **Canadian LRP** and **European Strategy**
- Main themes
- Design and Simulation (some experience, expand into novel technologies with collaborators)
 - Characterization (laser based, two photon absorption, PHAAR, M11, PTF, new CLS,...)
 - Fabrication (new addition, work with collaborators)
 - Integration and Assembly (long track record for many successful projects)
- Allows involvement in new experiments with novel detectors (future collider, ISAC, ALPHA, etc)
- In addition, pursue world class general detector R&D in its own right

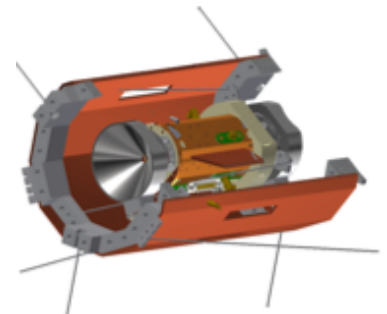


Identify three interconnected pillars

- Fast and single photon detectors (SiPMT, SPADs,..)
- Novel tracking detectors (rad hard LGAD, CMOS,..)
- Cryogenic detectors (liquid Xe, Ar, transition edge)

Advanced AMO & Precision Platform

- Central goal:
 - Establish a platform to connect the Canadian and international researchers in novel use of quantum and precision experiments in fundamental science
 - Provide common space, relevant expertise and resources to be shared among Q&P projects for their successful & effective advancement
- Main themes: Synergies between new projects around radioactive molecules RadMol, HAICU and TUCAN facility that require multidisciplinary research field which requires scientific expertise from fields which are usually not working together (RIB, AMO precision experiments, particle physics)
 - Will also have a joint session with ICAP (Toronto) during Science Weel in July
- TRIUMF technical support and resources indispensable cryogenics, electronics, DAQ, laser systems, mechanical design, hardware control, gas and cryogenic handling, etc. (shared interest with detector platform)
- Explore synergies with CMMS program (polarized beams etc)



New Building

- Space is one of the limiting factors for growth at TRIUMF, both experimental & office space
- Similar to IAMI, pitch a new building with benefits to BC and Canada
 - Training and learning center in collaboration with e.g. BCIT – TRIUMF as a satellite center
 - **On-the-job training in cutting-edge research environment**
 - **Work integrated learning**
 - Close collaboration of engineers, technicians and admin with scientists
 - Societal benefits / green technology
 - Use detectors for e.g. water and air quality monitoring
 - Connect to technology transfer and commercialization
 - Include a conference and workshop space and potentially an outreach & teaching center



Next steps

- Form two task forces across departments
 - Detector Development Platform
 - Advanced AMO & Quantum Center
- Also have combined meetings since ultimately there are likely benefits to have this combined as a "Quantum Initiative"
- Discuss the proposals further during
 - PSD retreat June 13th
 - Science Week in July
 - Submission of LOI to TRIUMF in September
 - White paper to the community by the end of the year



PSD Retreat June 13th

- Discussed preliminary agenda
- Likely time for 2 Particle Physics talks
 - Impact of 5-Year plan on “focus projects” in 2025-2030
 - New projects (DarkLight, PIONEER) + possible future projects with new hire requests

- Ample time to discuss new initiatives
 - Detector development R&D Center + Overview
 - Likely 2 talks from Particle Physics
 - Silicon/Photon detectors and Cryogenics detectors?
 - AMO/Precision/Quantum Center + Overview
 - 1 combined talk on HAICU & UCN

Divisional Goals and Objectives

Science and technology	1) Make groundbreaking discoveries across TRIUMF's multidisciplinary research portfolio	Deliver high-impact science		Lead and participate in SAP research including delivering high-impact results in PP, NP, experiment and theory. Publish scientific results in SAP 200 publications total with 40 high-profile publications.	Complete scientific and technical analysis and publish results from Particle Physics, focus on ATLAS, T2K, UCN, ALPHA, SuperCDMS to test SM and BSM.					PP, NP, Theory
					Support detector development for ATLAS LAr Upgrade, ATLAS ITk, UCN, nEDM, T2K, mPMT, IWCD, HAICU, nEXO					SciTech
	2) Reinforce TRIUMF as a globally leading particle accelerator centre	Develop enterprise operational excellence		Develop and deliver technical contributions to SAP physics experiments	Develop and research new techniques and directions in SAP for future experiments (DarkLight, PIONEER, HAICU). Develop detectors for nEXO for a possible installation at SNOLAB					PP
		Seed the development of green technologies and our quantum strategy		Engage in R&D efforts for green technologies and/or quantum sensing, materials and computing applications	At least one project in quantum machine learning techniques or quantum technologies or environmental monitoring applications.					Scientific Computing
				Continue to develop Infrastructure to support Green and Energy Sustainable Technologies	Support the design/construction of the M9H beamline, which has the capabilities to support such research in enclosed environments.			Syd Kreitzman		CMMS
				Expand the R&D capabilities relevant to Quantum Materials Research	Bring M9A online and integrate into the CMMS operations.			Syd Kreitzman		CMMS
					Progress with the M15 Revitalization aimed at more effective experiments in the typically small "quantum material" samples			Gerald Morris		CMMS

Training


- CNSC audit will require updated training records

- From Petr:
- Everyone needs to review their training records in Workday for accuracy by going to Learning -> My Learning -> View Learning Transcript. Check
 - Is there any training that you missed in the transcript?
 - Are you aware of any training that you are supposed to take, and it does not show up in your transcript?
 - Is there any training that you did but it is listed as incomplete in the transcript?

- Let me know about any inaccuracies
- If there is any training with an incomplete status that has not been taken, it should be completed asap

Science Week



 TRIUMF Science Week 2022

18–22 Jul 2022
TRIUMF / Zoom
Canada/Pacific timezone

Registration for TRIUMF Science Week 2022 is now OPEN!

- Overview
- Program
- Invited speakers
- VR poster session
- Live-bridge to ICAP in Toronto
- Timetable
- Register
- Accommodation
- Code of Conduct
- Access to TRIUMF and mask policies



 TRIUMF

Science Week
July 18 - 22, 2022

Shaping
the future
of TRIUMF

We are excited to welcome you back in-person AND online to TRIUMF Science Week 2022!

Social

- Back to Darby's (the Cove is permanently closed)
- So for those comfortable to join and interested, it will be 5:30pm this Thursday
- I reserved a table under TRIUMF





AOB