TRIUMF

SciTech to 2030

Plans and wishes for the future of Science Technology Department

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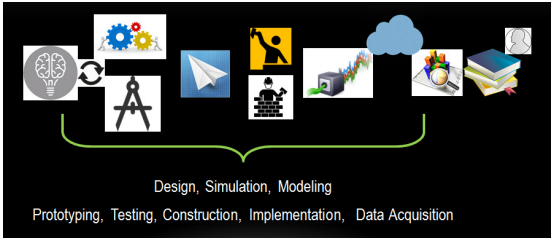
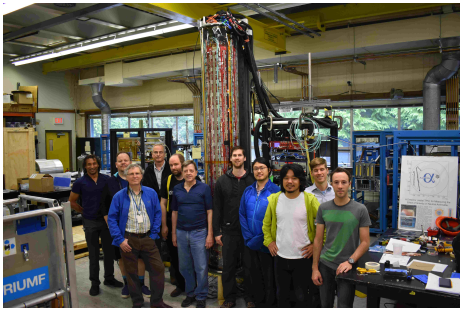


- A department in Physical Sciences Division
- Helping Canadian Scientists make their experiments work at high standards
- 5 Groups, covering detector design and optimisation, mechanics/wires/scintillators, electronics, DAQ, services (such as cryogenics)
- About 28 people: technicians, technologists, engineers, physicists, researchers
- Facilities: lab space, clean-rooms, machine shop, electronics lab, DAQ centres

People 1: Maintain status quo

- -Our most important resource
- Currently filling several replacements for people who moved on
- Scintillator Workshop (DSF) would be more efficient with a fourth person on hand
- Maintain our abilities, Keep access to training
  - Technology changes, keep people up-to-date and looking at the future
  - Aware of what is possible
- Our workload is high: we like that, but some room to develop ideas always welcome
- And important for retention
- Also for retention: make temporarily-funded positions permanent where we know we have a long-term need



People 2: Expand to fill skills missing

- We are aware of some shortages at TRIUMF
- Cryogenics: TRIUMF expertise is waning, need new blood, for Services Infrastructure group
- Ideally: Overlap with current expert
- New DAQ group member - help with operations and projects, continuity with MIDAS
  - Recently moved one person from DAQ to Electronics to face reality: he was working on firmware with electronics group, and that is needed long term
  - Leaves a hole to be filled in DAQ
- Expand firmware expertise
- Chip design
- Lasers

- SciTech grew with a lot of dedicated physicists, learning and developing new detector techniques
- Very creative and flexible skill set, adaptable to new methods
- Some opportunistic hires when the right people come along will maintain this
- Also helped by more focused development of detector technologies, not limited by specific experiment time frames and needs
  - Fits in well with proposal for separate Detector Development program (SiPMs, pixel detectors, ...)
  - Also: need space. Quality space. A new building with an innovation centre and discussion spaces, bringing SciTech Groups closer together would allow cross fertilisation, speedy development of solutions

- What would enable better or more affordable detectors
- Just received funding for a new fast oscilloscope; such tools are essential to enabling modern techniques
- 3D printers
  - High end, metal printing, composites?
  - I would start first with training people in design for additive manufacture - we can always go to outside companies for the print itself. But clearly, having a printer on-site would be highly motivating to develop the skills
- Evaluate what we don't have:
  - Laser cutters (for ISAC targets, silicon wafers and other specialist materials)
  - Wire eroder (for high precision, delicate, hard materials, ...)
  - Composites: Vacuum bagging, autoclave, ... (Lightweight, low material, stable support structures, thermal management)
- Not necessarily sited in SciTech: much of this would fit well in the central workshop

Summary

- Highlights:
  - People and their experience are our biggest asset
  - Need to recruit new skills
  - Getting one or two star-physicists for specialist magnets, cooling, lasers needed to go beyond standard solutions for your experiments
- Need to update, modernise equipment to stay on top and give you the best