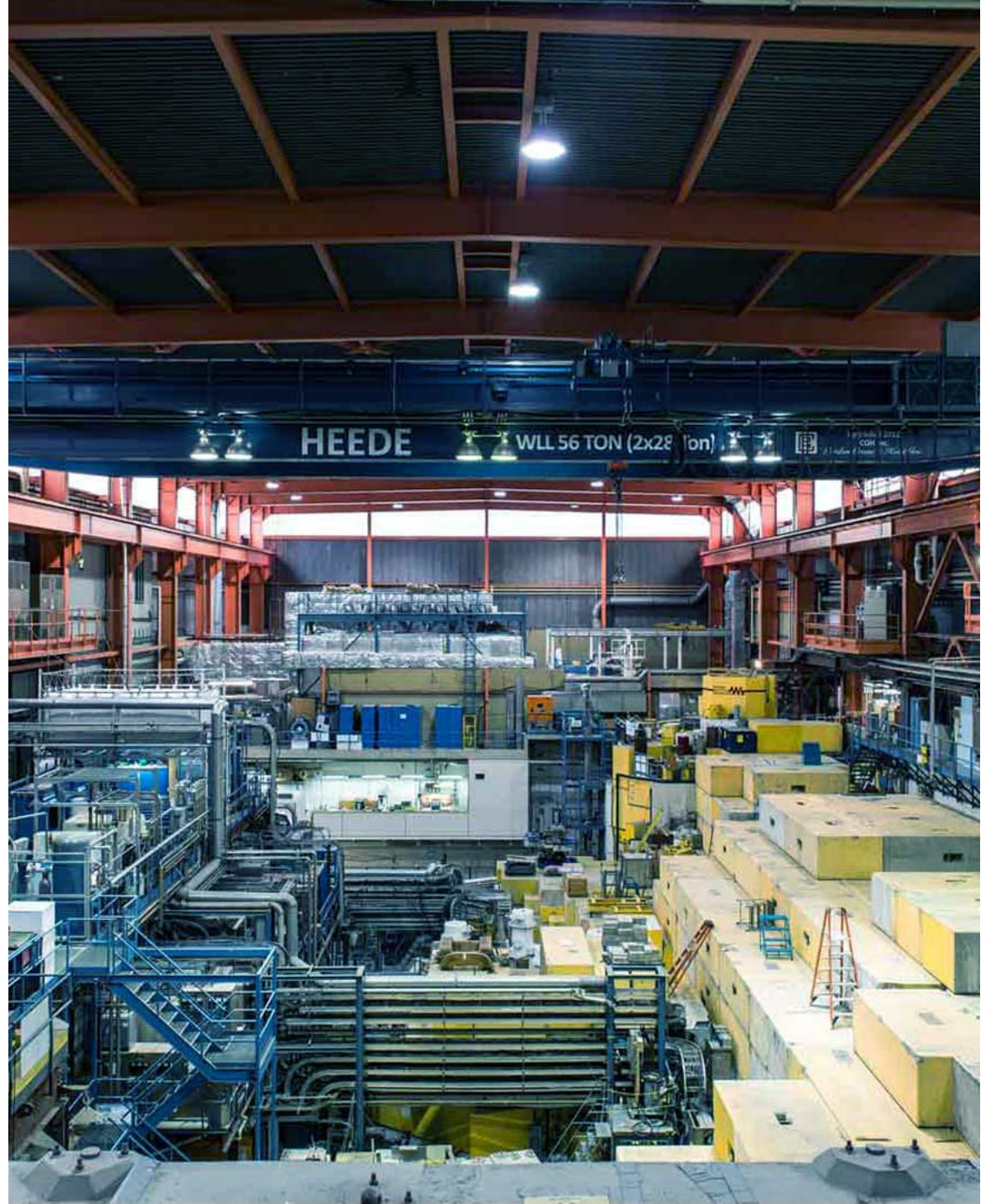


Driver beam lines and ISAC accelerator development - convener report -

Marco Marchetto
Accelerator Division

2020-08-21

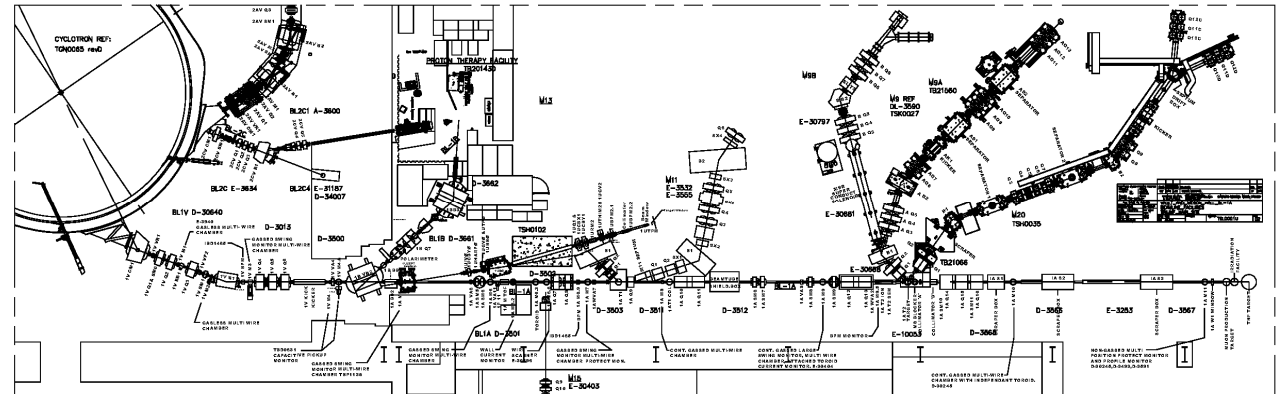
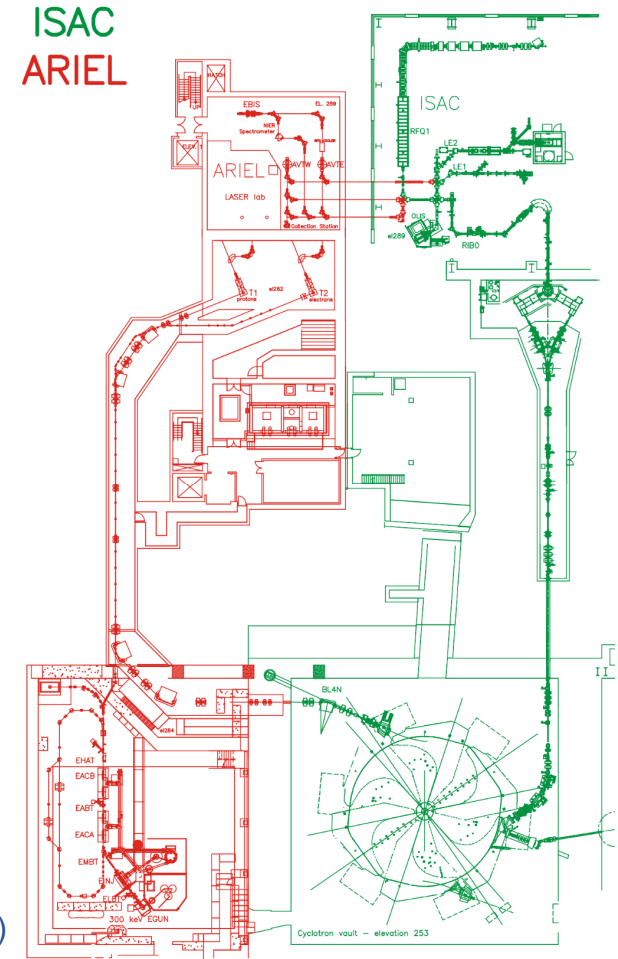


PROTON beamlines: BL1A, BL4N and beyond (Y. Bylinski)

- BL1 serves many experiments in Meson Hall, PIF/NIF and Nuclear medicine irradiations
 - Over the years it developed several issues, some are addressed, others still pending
 - Remote handling expertise
 - Two Working Groups are charged with:
 - 1) revisiting the experimental and beam physics requirements
 - 2) developing implementation plan for BL1 refurbishing and upgrade
- BL4N concept has been frozen and released
 - All quadrupoles are in hand, 2 large dipoles still to be procured
 - Beam instrumentation relies on advanced BPMs and wire scanners (to be developed and validated in BL2A)
 - MPS for BL4N tunnel section will be a challenge (with e- & p+)
- Beyond...
 - Should TRIUMF develop superconducting magnets expertise?

Discussion:

- BL1
 - Replace critical components like triplet Q14-16 with rad-resistant while developing rad-hard technology
 - Remote handling: complete hands-off on routine operation
 - Replacement vs refurbishing: easier to replace but require waste management
- BL4N
 - No much discussion: part of the ARIEL project and needs to be completed but...
- Beyond: should we invest in new technology
 - Superconducting magnets would be a learning curve and better if coupled with a project (unlikely BL4N, maybe TR100)
 - Better to invest in rad-hard technology development that is part of our core operation

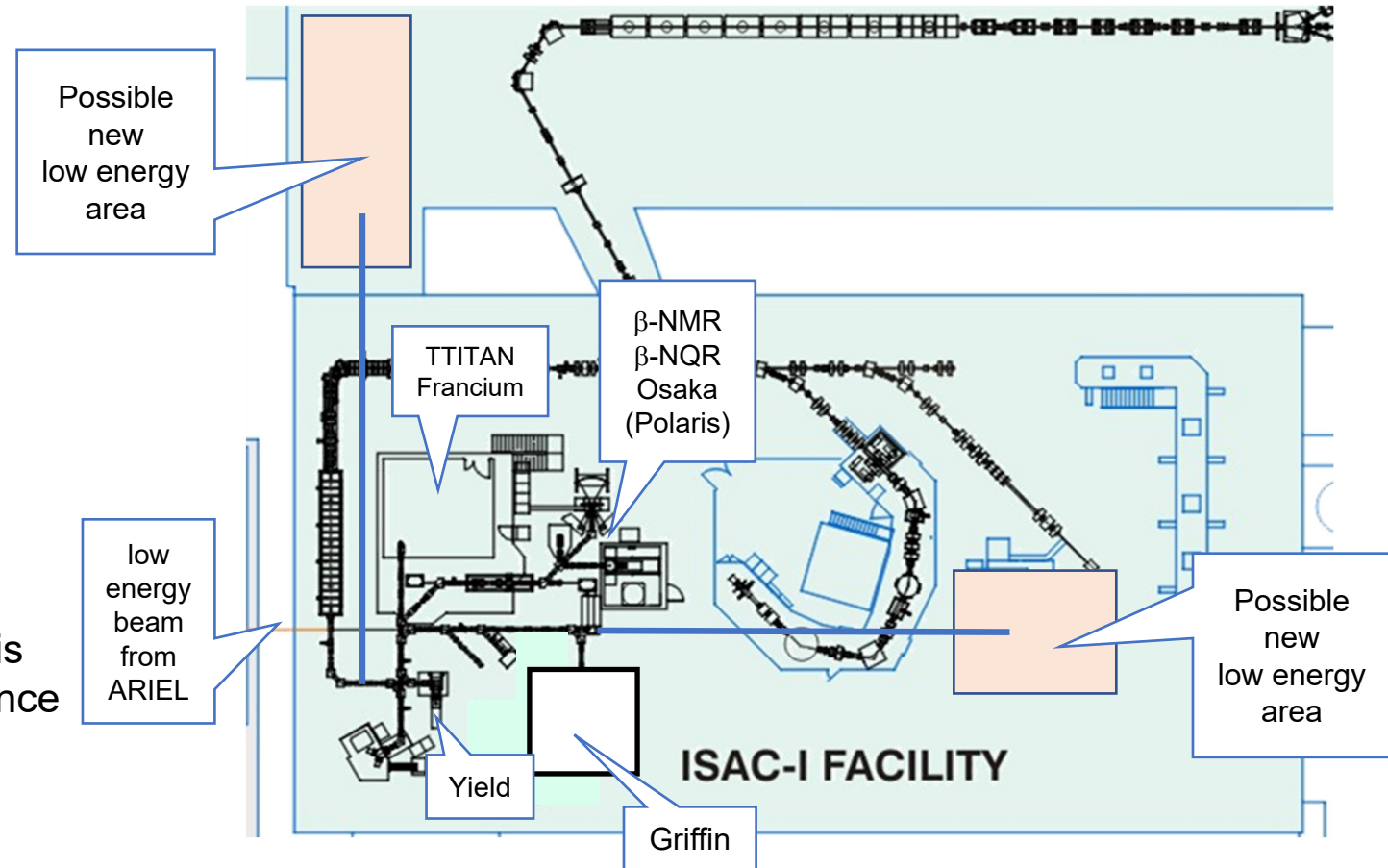


ISAC low energy area optimization (F. Ames)

- New low energy experimental areas:
 - VECC area (ISAC-II vault)
 - ISAC-I module assembly areas
- Beamline paths not easy to implement
 - VECC area: very limited space and would have to cross magnetic beamline or flying overhead
 - ISAC-I module assembly: easier to reach, required TUDA shack relocation and Target modules assembly area

Discussion:

- New beamlines around the ISAC-I RFQ to reach VECC area not practical (better outside)
- Going above (or around) DRAGON (NOT TO BE MOVED!) seems reasonable
- Real issue seems the present condition:
 - ILE1: Griffin
 - ILE2: TITAN, β -NMR, β -NQR, OSAKA, Polaris
- Create a working group Accelerator-Physical Science to address the issue

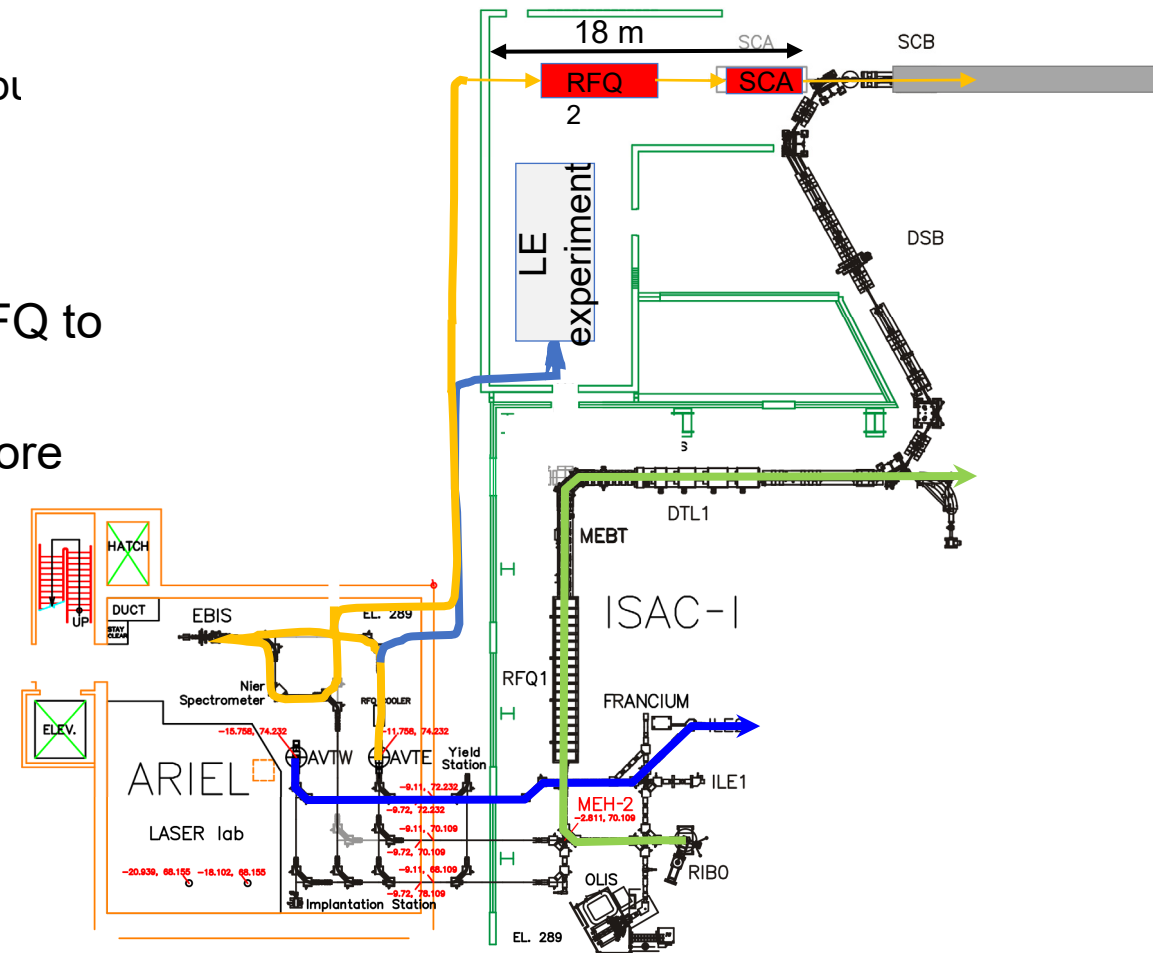


Future post accelerator at TRIUMF (B. Laxdal)

- LE beamline to new LE area – modest enclosure
- New RFQ tailored for A/Q from 2 to 7 (charge bred beams) with output energy compatible with SCA injection (400keV/u) – similar in size to FRIB RFQ – overcomes DTL bottleneck in A/Q
- New “SCA” section (7 cavities @ 4.1% and 70MHz)
- 2 independent post-accelerated RIB beams
- Could increase space charge limit for deuterons (U. Koester talk) but shielding would be an issue

Discussion:

- For high charge EBIS beams it is more efficient to use an RFQ to 400keV/u compared to 150keV/u RFQ in previous scheme
- Not as flexible as the original second accelerator path but more affordable
- Preserve the VECC area for LE experiment
- Easier path for LE beam lines
- Experimenters see the benefit of 2 post accelerated beams

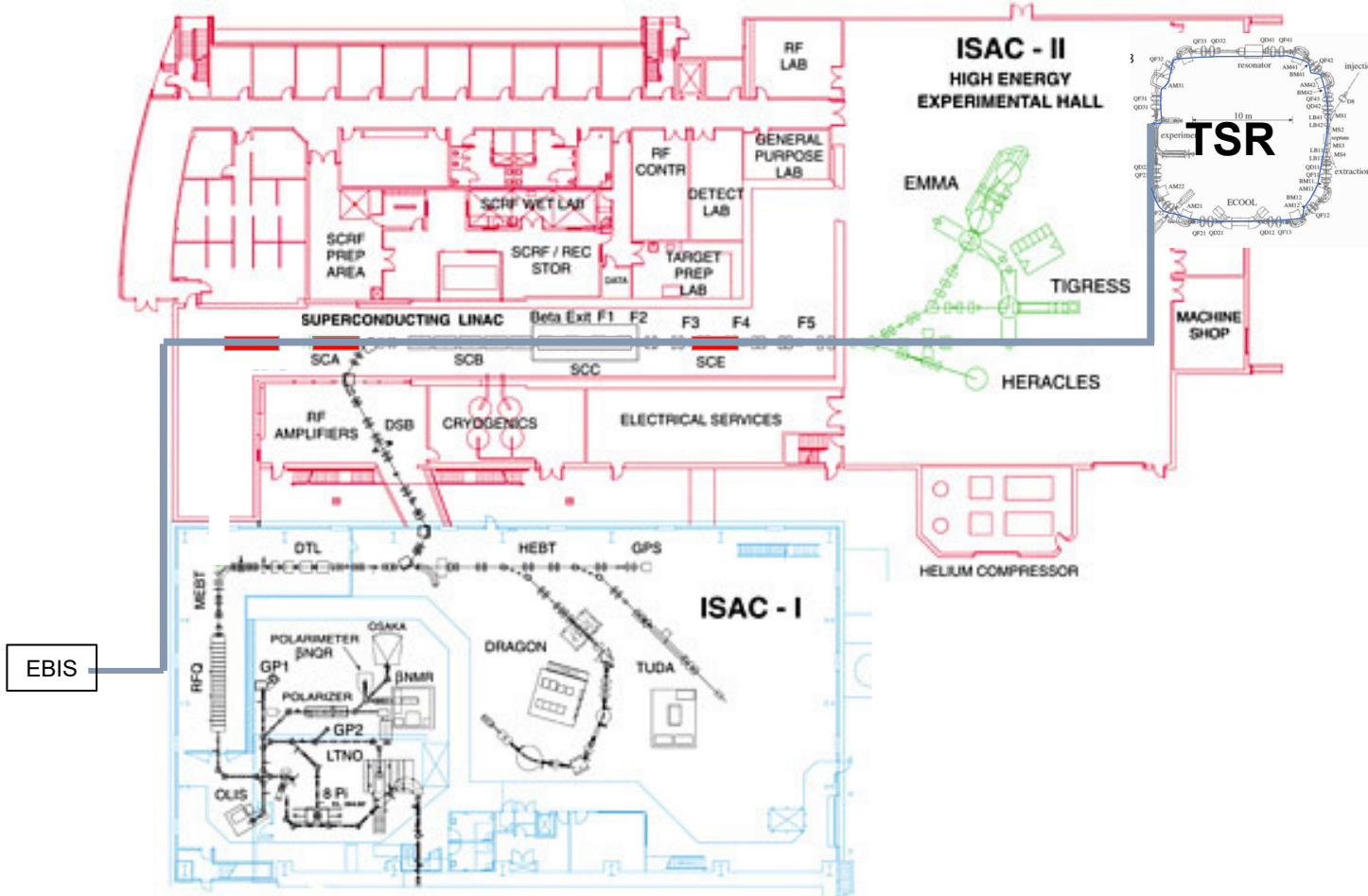
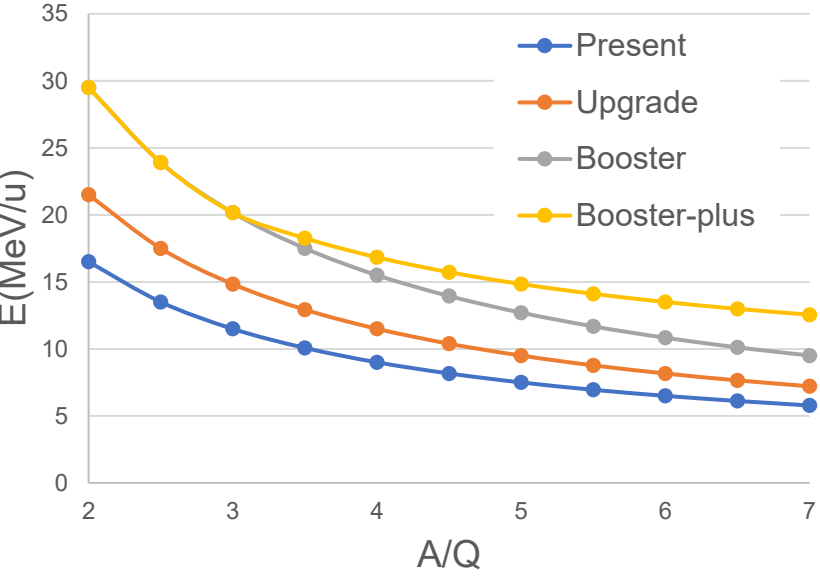
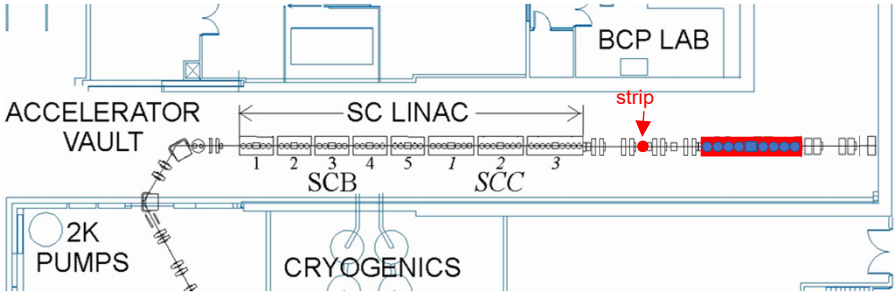


Future post accelerator at TRIUMF (B. Laxdal)

- ISAC-II booster cryomodule to increase final energy
- The new 2nd line could feed ISAC-II experiments plus a storage ring a la TSR

Discussion:

- Some experimenters are very happy about the idea of higher energy



Thank you
Merci

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