

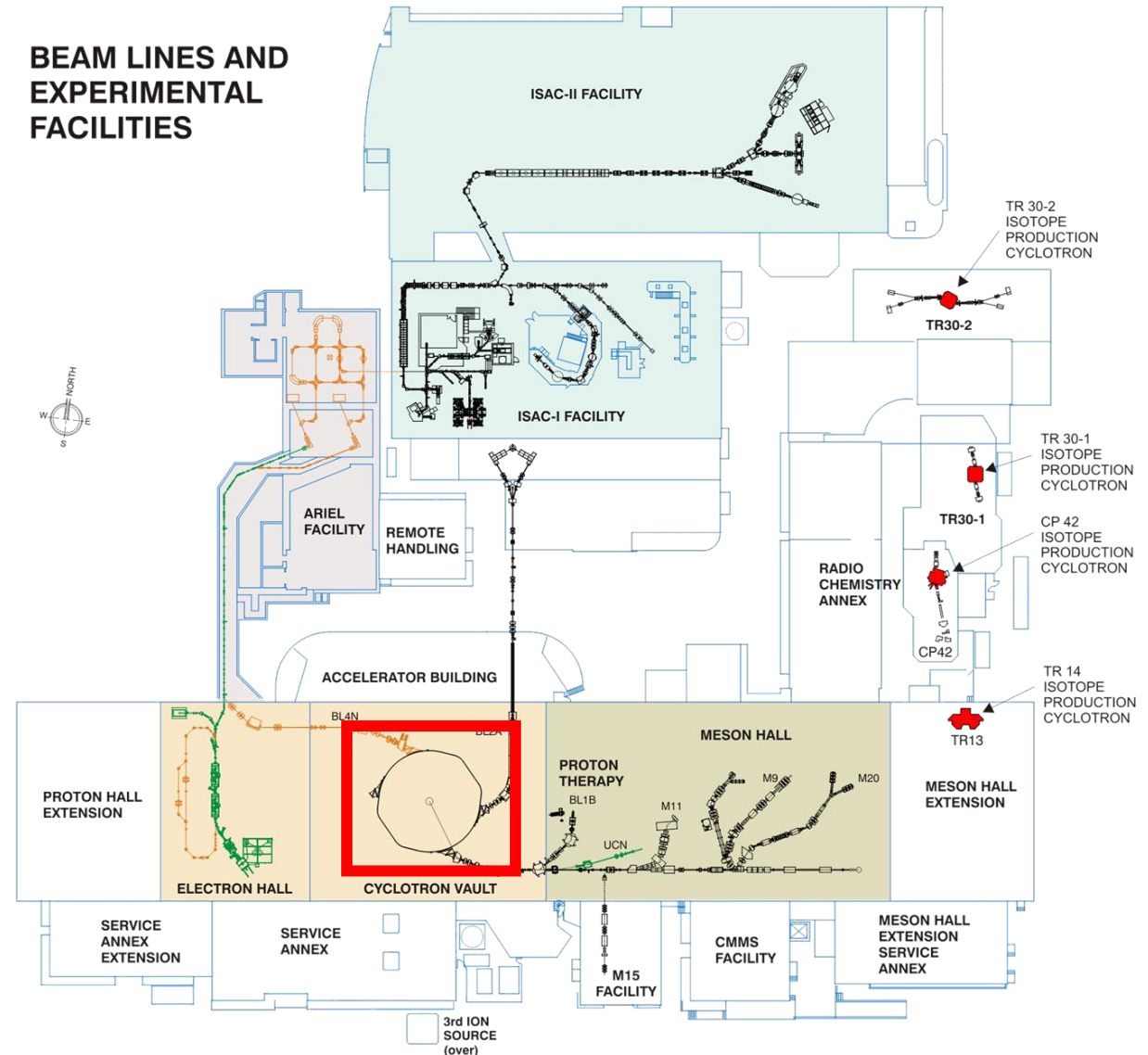
TRIUMF Update

Tom Day Goodacre

Many thanks to A. Laird, F. Maldonado, M.P. Reiter & M. Williams

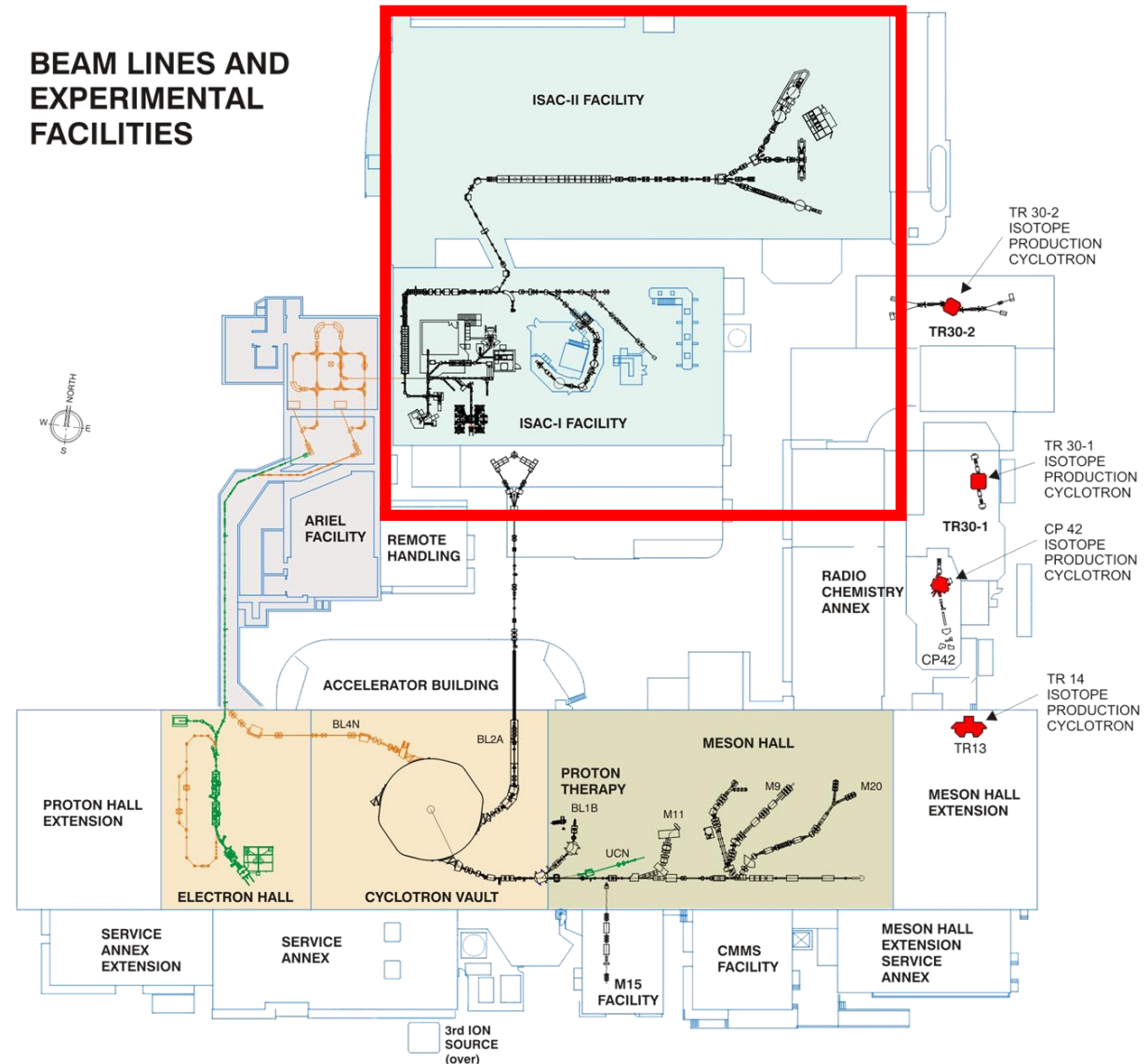
TRIUMF Canada's Particle Accelerator Centre

- Main cyclotron 480 MeV, 50 kW proton beams for RIB production



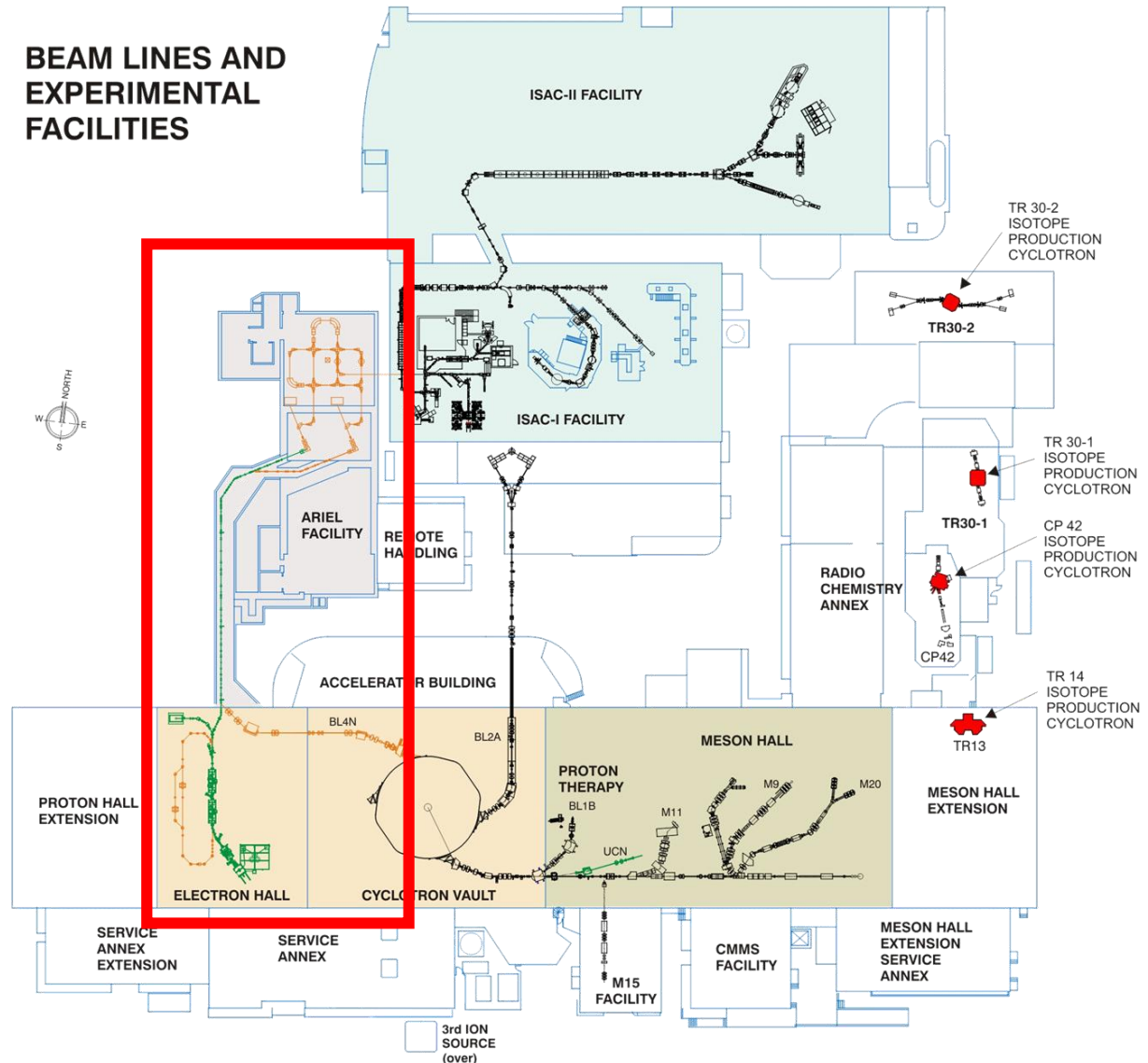
TRIUMF Canada's Particle Accelerator Centre

- Main cyclotron 480 MeV, 50 kW proton beams for RIB production
- ISAC/ISAC II Facilities delivering low energy and reaccelerated RIB



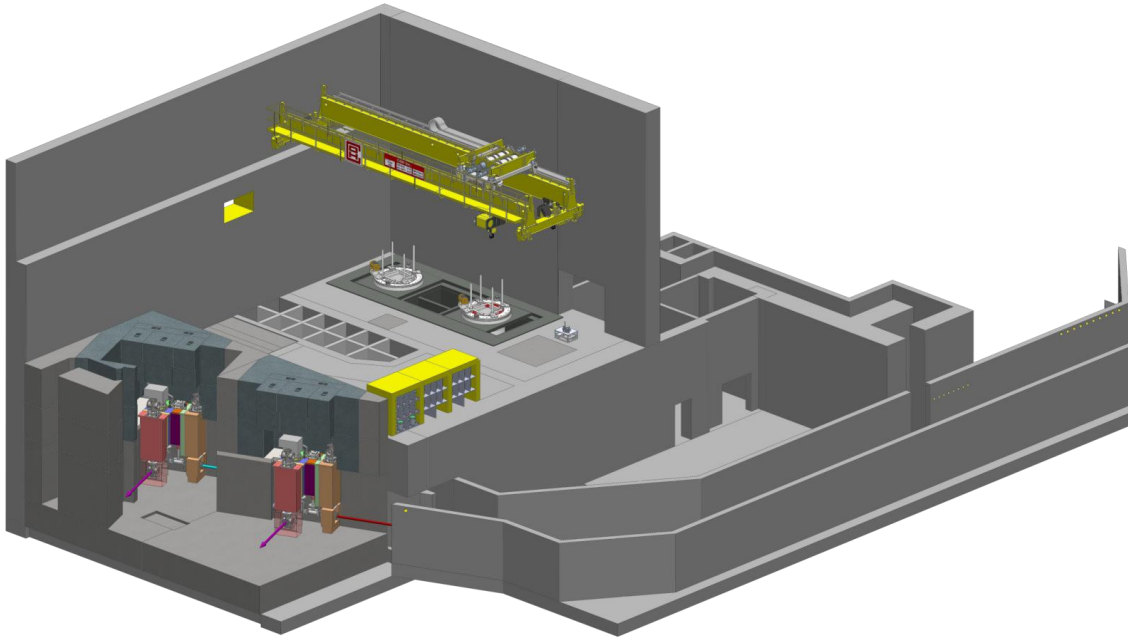
TRIUMF Canada's Particle Accelerator Centre

- Main cyclotron 480 MeV, 50 kW proton beams for RIB production
- ISAC/ISAC II Facilities delivering low energy and reaccelerated RIB
- ARIEL Facility 30 MeV, 100 kW electrons for RIB production + additional proton target station

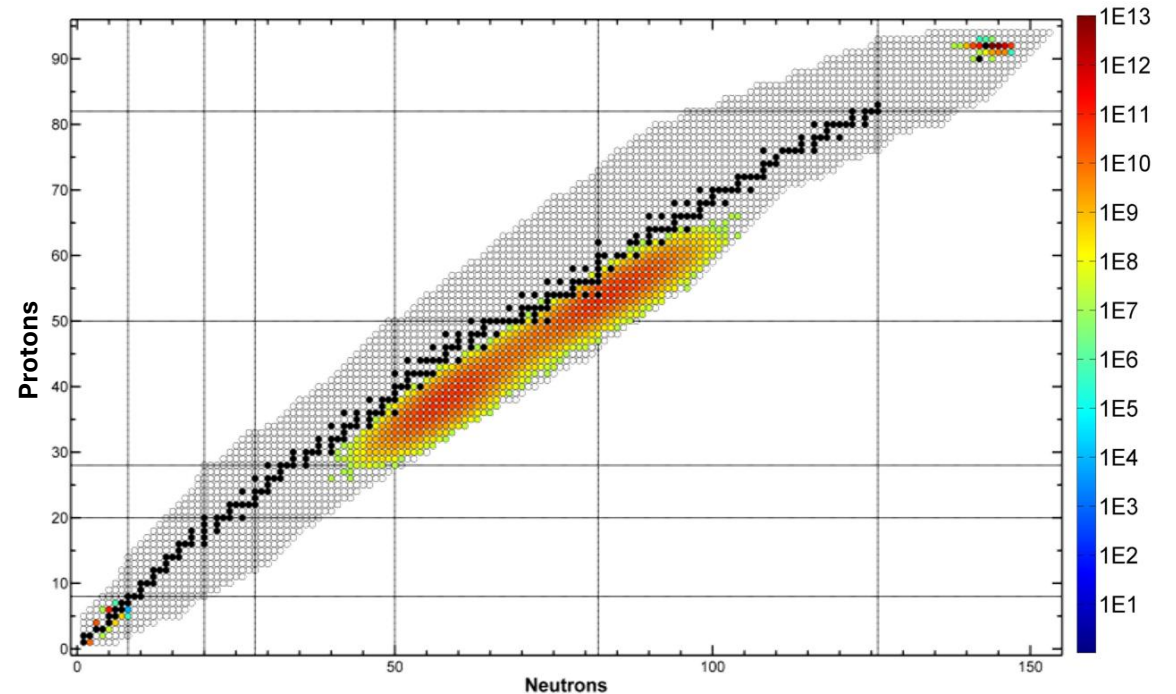


Transitioning to the ARIEL era

- Current status: shutdown to facilitate ARIEL installation
- June 2027: ISAC restarts
- 2029: 5000 RIB hours delivered, **2000 from ARIEL target stations**
- >2029: theoretical 9000 RIB hours – **significant opportunities**



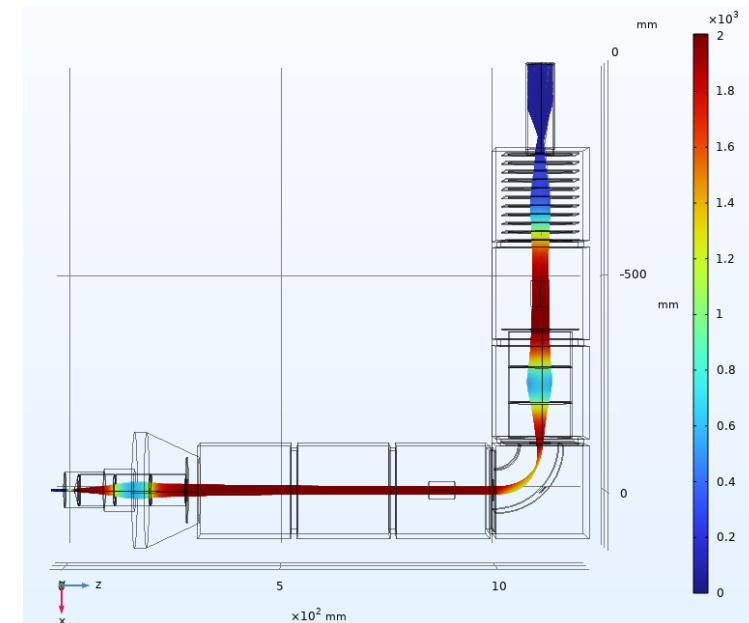
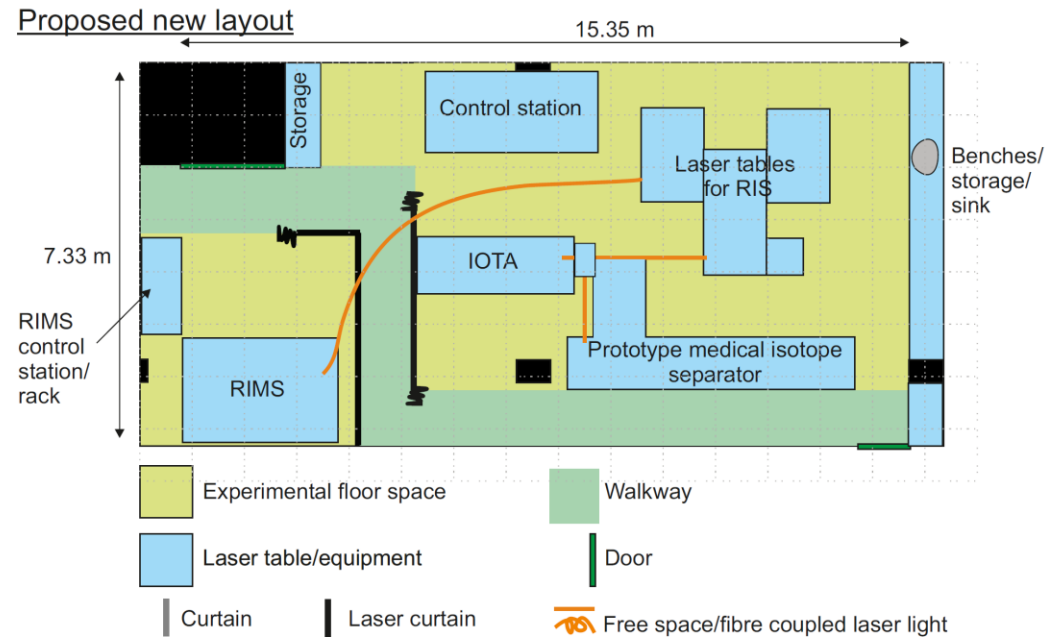
AETE in-target production calculation



Transitioning to the ARIEL era

- Current status: shutdown to facilitate ARIEL installation
- June 2027: ISAC restarts
- 2029: 5000 RIB hours delivered, **2000 from ARIEL target stations**
- >2029: theoretical 9000 RIB hours – **significant opportunities**

UoM – TRIUMF collaboration on ARIEL Ion source development



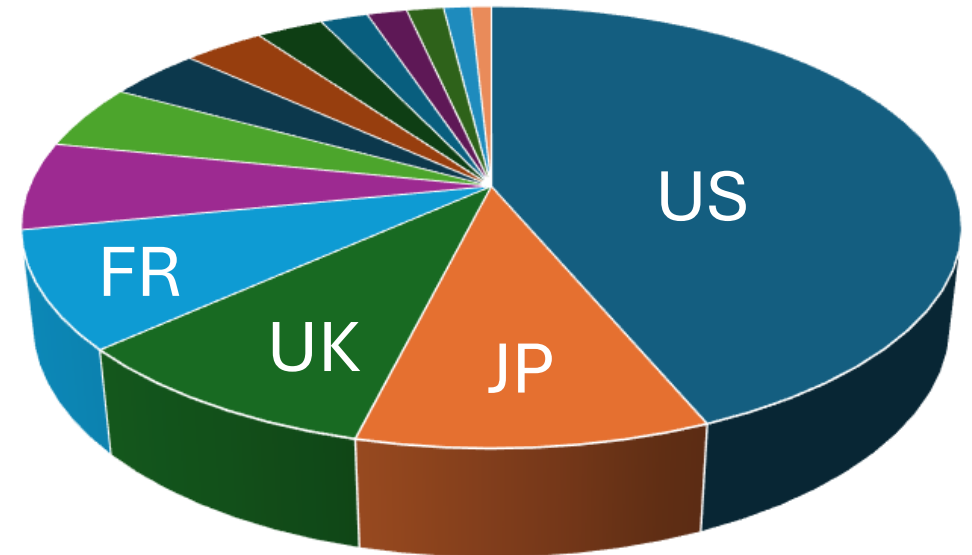
A. Zadvornaya

UK Nuclear Physics at TRIUMF

Extensive UK involvement and leadership in TRIUMF's Nuclear Structure and Nuclear Astrophysics Programmes

- 2/3 most recent chairs of User Executive Committee

TRIUMF visitors 2015-2025

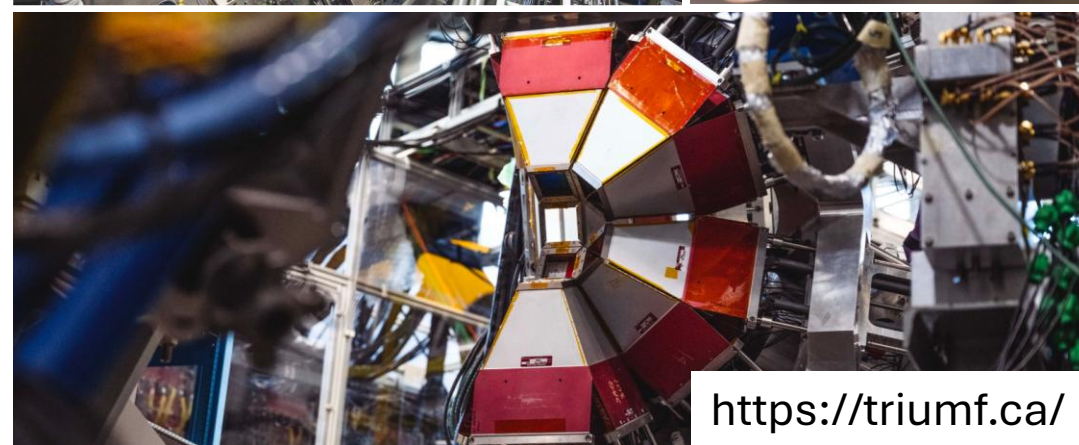
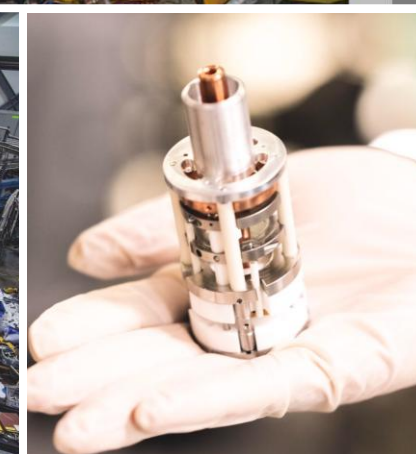
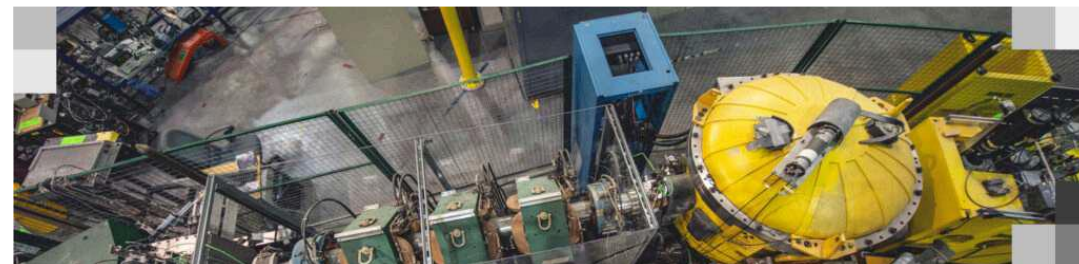


14 UK institutions, >50% of visitors from Surrey, York and Edinburgh

UK Nuclear Physics at TRIUMF

Extensive UK involvement and leadership in TRIUMF's Nuclear Structure and Nuclear Astrophysics Programmes

- 2/3 most recent chairs of User Executive Committee
- Strong track record UK PIs



<https://triumf.ca/>

UK Nuclear Physics at TRIUMF

Extensive UK involvement and leadership in TRIUMF's Nuclear Structure and Nuclear Astrophysics Programmes

- 2/3 most recent chairs of User Executive Committee
- Strong track record UK PIs
- From DRAGON, TUDA and EMMA to TITAN GRIFFIN and TIGRESS

PHYSICAL REVIEW LETTERS **134**, 112701 (2025)

Editors' Suggestion

First Measurement of a Weak r -Process Reaction on a Radioactive Nucleus

M. Williams^{1,*}, C. Angus^{2,3}, A. M. Laird^{3,2}, B. Davids^{2,4}, C. Aa. Diget^{3,2}, A. Fernandez⁵, E. J. Williams², A. N. Andreyev³, D. T. Doherty¹, E. Geerl¹, J. Jeong^{6,2}, M. C. Jü¹, M. S. Martin^{4,8}, S. N¹, A. Psaltis¹⁰, E. Raleigh¹

¹School of
²

³School of Physics,
⁴Department of Phys

PHYSICAL REVIEW LETTERS **134**, 232701 (2025)

Precision Mass Measurements Reveal Low Neutron Pairing in Tin beyond $N = 82$ and Its Impact on Stellar Nucleosynthesis

A. Mollaebrahimi^{1,2,3,4}, C. Walls^{4,2}, T. Dickel^{3,1}, T. Miyagi^{5,6,7,8}, A. Sieverding^{9,10}, C. Andreou¹¹, J. Ash², G. Gelinis^{12,2}, J. Lassen², M. P. Reiter¹³, Kwiatkowski^{19,2}

PHYSICAL REVIEW LETTERS **134**, 052503 (2025)

Refined Topology of the $N = 20$ Island of Inversion with High Precision Mass Measurements of $^{31-33}\text{Na}$ and $^{31-35}\text{Mg}$

E. M. Lykiardopoulou^{1,2}, C. Walls^{1,3}, J. Bergmann⁴, M. Brodeur⁵, C. Brown⁶, J. Cardona^{1,3}, A. Czihaly^{1,7}, T. Dickel^{8,4}, T. Dugue^{1,7}, B. Kootte¹⁵, T. Miyagi^{1,7}, S. Paul^{1,19}, W. S. S. Paul^{1,19}

²Department of Phys

³Department

⁴IL

⁵Department

⁶School of

⁷Department of

⁸GSI

¹²Université Paris

¹³

¹⁶Tec

¹⁷Departm

²⁰Helmholtz R

²¹Center for Com

PHYSICAL REVIEW LETTERS **134**, 062701 (2025)

Direct Mass Measurements of Neutron-Rich Zinc and Gallium Isotopes: An Investigation of the Formation of the First r -Process Peak

Andrew Jacobs^{1,2,*}, Stylianos Nikas³, John Ash¹, Behnam Ashrafkhani^{1,4}, Ivana Belosovic¹, Julian Bergmann⁵, Callum Brown⁶, Jaime Cardona^{1,7}, Eleanor Dunling¹, Timo Dickel^{8,9}, Luca Egoriti^{1,2}, Gabriella Gelinis^{1,4}, Zach Hockenbery^{1,9}, Sakshi Kakkar^{1,7}, Brian Kootte^{1,7}, Ali Mollaebrahimi^{1,5}, Eleni Marina Lykiardopoulou^{1,2}, Tobias Murböck^{1,5}, Stefan Paul¹, Wolfgang R. Plaß^{5,8}, William S. Porter^{1,10}, Moritz Pascal Reiter⁶, Alex Ridley^{1,11}, Jon Ringuelette^{1,11}, Christoph Scheidenberger^{5,8,12}, Rane Simpson^{1,2}, Coulter Walls^{1,7}, Yilin Wang^{1,2}, Jens Dilling^{13,14}, and Ania Kwiatkowski^{1,15}
¹TRIUMF, 4004 Wesbrook Mall, Vancouver, British Columbia V6T 2A3, Canada
²Department of Physics and Astronomy, University of British Columbia, 6224 Agricultural Rd, Vancouver, British Columbia V6T 1Z1, Canada
³University of Jyväskylä, P.O. Box 35, FI-40014 University of Jyväskylä, Finland
⁴Department of Physics and Astronomy, University of Calgary, 2500 University Drive NW, Calgary, Alberta T2N 1N4, Canada
⁵II. Physikalisches Institut, Justus-Liebig-Universität Gießen, 35392 Gießen, Germany
⁶Institute for Particle and Nuclear Physics, University of Edinburgh, Peter Guthrie Tait Road, Edinburgh EH9 3FD, United Kingdom
⁷Department of Physics and Astronomy, University of Manitoba, 30A Sifton Road, Winnipeg, Manitoba R3T 2N2, Canada
⁸GSI Helmholtzzentrum für Schwerionenforschung GmbH, 64291 Darmstadt, Germany
⁹Department of Physics, McGill University, 3600 Rue University, Montréal, Québec H3A 2T8, Canada
¹⁰Department of Physics and Astronomy, University of Notre Dame, Notre Dame, Indiana 46556, USA
¹¹Department of Physics, Colorado School of Mines, Golden, Colorado 80401, USA
¹²Helmholtz Research Academy Hesse for FAIR (HFHF), GSI Helmholtz Center for Heavy Ion Research, Campus Gießen, 35392 Gießen, Germany
¹³Oak Ridge National Laboratory, 1 Bethel Valley Road, Oak Ridge, Tennessee 37831, USA
¹⁴Department of Physics, Duke University, 120 Science Dr, Durham, North Carolina 27708, USA
¹⁵Department of Physics and Astronomy, University of Victoria, 3800 Finnerty Road, Victoria, British Columbia V8P 5C2, Canada

Upgrades, additions and opportunities

- Novel RIB from ARIEL
- Ongoing upgrades and additions including decay tagging at EMMA and the integration of the TACTIC detector
- Neutron capture storage ring design study funded
- Utilising three independent target stations
- EBIS commissioning ongoing

