

PERSONAL INFORMATION

orcid.org/0000-0001-6193-6601 / scopus author ID : 35240816100

h-index (google scholar) : 32, >3300 citations (google scholar 11/2025)

Nationality: French

email : cmabrunot@triumf.ca

Phone: +1 604 222 7617

• WORK EXPERIENCE

- 2024 – **TRIUMF tenured research scientist** (BAE - Level B)
Particle Physics Deputy Department Head
- 2024 – **Adjunct Professor**
University of British Columbia, Vancouver, CANADA
- 2022 – **Adjunct Professor**
McGill University, Montréal, CANADA
- 2022 – 2023 **TRIUMF research scientist** (BAE - Level A)
Particle Physics Department, TRIUMF, CANADA
- 2016 – 2021 **CERN research physicist** (CERN research staff)
Experimental Physics Department, CERN, SWITZERLAND
- 2013 – 2015 **CERN senior research fellow**
Physics Department, CERN, SWITZERLAND
- 2012 – 2013 **Post-doctoral fellow**
Stefan Meyer Institute for Subatomic Physics (Austrian Academy of Sciences), AUSTRIA

• EDUCATION & UNIVERSITY DEGREES

- 2023 **Habilitation** Université Paris Saclay
- 2012 **Ph.D. in Physics**, University of British Columbia, Vancouver, CANADA
- 2007 **Double Master Degree**: Technische Universität Wien, Vienna, AUSTRIA & Ecole Centrale Marseille, Marseilles, FRANCE

• GRANT AWARDS

- 2024 – 2027 NSERC Project grant CCIDD (co-PI, \$350'000 over 3 years)
- 2023 – 2026 NSERC Discovery grant for PIONEER (PI, \$555'000 over 3 years)
- 2023 – 2028 MRS for a specialized firmware engineer - application in the context of PIONEER (co-PI, \$518'300 over 5 years)
- 2023 – 2028 CFI nEXO (co-PI, \$9'775'000 over 5 years)
- 2022 – 2025 NSERC Discovery grant for nEXO (co-PI, 930kCAD/year for 3 years)
- 2022 – 2023 NSERC Discovery grant for PIONEER (PI, 74kCAD/year for 1 year)

• SUPERVISION OF STUDENTS & EARLY CAREER SCIENTISTS

- 2023 – Member of PhD Supervisory Committees at Simon Fraser University and McGill University
- 2021 Member of PhD jury at TU Darmstadt
- 2016 – As an independent PI I supervised: 4 postdocs, 4 PhD students (including 3 CERN doctoral students), 7 Master students, 21 undergraduate students

• TEACHING ACTIVITIES AT NATIONAL OR INTERNATIONAL SCHOOLS

- 2024 – Lecturer for co-op students at TRIUMF, CANADA
- 2017-2021 Lecturer at the CERN Summer school, SWITZERLAND
- 2020 Lecturer at AVA school on Precision Studies, Prague, CZECH REPUBLIC
- 2018 Lecturer at :
 - International School on Antimatter Physics, CERN, SWITZERLAND
 - Euroschool on exotic beams, Leuven, BELGIUM
 - International Summer Workshop on High Energy Physics, Benasque, SPAIN

• ORGANIZATION OF SCIENTIFIC MEETINGS

- 2026-2027 Member of the organization committee of **CKM2027**
- 2025 Chair of the organization committee of **XeSAT2026**
- 2024 Co-chair of the organization committee of **TRIUMF Science week 2024**

2024	Co-organizer of the TRIUMF Quantum Strategy Workshops
2023 –	Member of the association “Physique Outre-mer”
2023-2024	Member of the scientific committee of EDSU tools 2024
2023	Member of the local organization committee of TRIUMF Science week 2023
2022 –	Member of the organization committee of TRISEP2022 and 2025 summer school
2021	Co-organizer of the first Physics Beyond Collider technology mini workshop at CERN
2018 –	Member of the International Advisory Committee of EXA (2020-), PSAS (2018-), FFK (2023-), XeSAT(2024-), LEAP (2024-)

• **SELECTED PIONEER COLLABORATION RESPONSIBILITIES**

2024 –	Deputy spokesperson of the PIONEER Collaboration
2024	Co-chair of the DEI (Diversity, Equity, Inclusion) committee in PIONEER
2023 –	Member of PIONEER Institutional Board as TRIUMF representative
2022 –	Member of the conference committee for PIONEER

• **COMMISSIONS OF TRUST**

2024	Reviewer on the Mock MAC session for the Canada Foundation for Innovation’s (CFI) 2025 Innovation Fund competition for the University of Calgary
2024	International expert for the Helmholtz Association - Reviewer for the “Helmholtz Investigator Groups (HIG)” Program
2017 –2023	Vice-chair of ADUC (CERN Antiproton User Committee) i.e. co-spokesperson of the CERN AD’s users community (~400 physicists)
2019	External referee for the Dutch Research Council (Innovational Research Incentives Scheme Vici)
2018	External international referee for the GBAR experiment at the scientific council of the CEA IRFU/DPhP (Department of Particle Physics)

• **EXPERTISE**

My research lies at the intersection of several areas of physics in relation to three major fundamental topics in particle physics: 1/ the search for new physics beyond the Standard Model *with low energy probes* with the PIENU & PIONEER experiments 2/ the origin of matter/antimatter asymmetry using *antihydrogen atoms* with the ASACUSA and AEGIS experiments 3/ the nature of dark matter via the *search for axions* with the RADES experiment. My work relies on *low energy* (from MeV to μeV) *precision measurements* at accelerator facilities to provide potential answers to these fundamental questions. Technical expertise: vacuum, cryogenics, hydrogen source, spectroscopy, particle detectors

• **PUBLICATIONS**

Full publication list: <https://inspirehep.net/authors/1056752>

SELECTED LIST OF 10 PUBLICATIONS [2015-2025]

* = **main author or corresponding author**

1. L. Nowak, **C. Malbrunot*** et al. *CPT and Lorentz symmetry tests with hydrogen using a novel in-beam hyperfine spectroscopy method applicable to antihydrogen experiments* **Phys. Lett. B** **858** 139012 (2024)
2. Comparat, D. ; **Malbrunot, C. *** et al. *Experimental perspectives on the matter-antimatter asymmetry puzzle: developments in electron EDM and \bar{H} experiments* **Philos. Trans. R. Soc. A** **382**, 2266 (2023)
3. **C. Malbrunot***, T. Wolz, L. Nowak, D. Comparat *Simulation of antihydrogen deexcitation in neutral atom traps for improved trapping and cooling* **J. Phys. B: At. Mol. Opt. Phys.** **55** 044003 (2022)
Special issue: emerging leaders
4. T.Wolz, **C. Malbrunot***, M. Vieille-Grosjean and D. Comparat *Stimulated decay and formation of antihydrogen atoms* **Phys. Rev. A** **101**, 043412 (2020)
5. D. Comparat and **C. Malbrunot** *Laser-stimulated deexcitation of Rydberg antihydrogen atoms* **Phys. Rev. A** **99**, 013418 (2019)
6. **C. Malbrunot*** et al. *A hydrogen beam to characterize the ASACUSA antihydrogen hyperfine spectrometer* **NIM A** (2019) **935** 110-120
7. M. Diermaier, C.B. Jepsen, B. Kolbinger , **C. Malbrunot*** et al. *In-beam measurement of the hydrogen hyperfine splitting and prospects for antihydrogen spectroscopy* **Nature Communications** **8** (2017)
8. C. Amsler, M. Antonello, A. Belov [...] **C. Malbrunot*** [...] et al. *A cryogenic tracking detector for antihydrogen detection in the AEgIS experiment* **NIM A** (2020) **960**, 163637

9. A. Álvarez Melcón, S. Argüedas Cuendis [...], C. Malbrunot* [...], W. Wuensch, K. Zioutas *First results of the CAST-RADES haloscope search for axions at 34.67 μeV* **JHEP 2021, 75 (2021)**
10. A. Aguilar-Arevalo, et al. *Improved Measurement of the $\pi \rightarrow e\nu$ Branching Ratio* **Phys. Rev. Lett. 115, 071801 (2015)**

- **INVITED TALKS**

[2015-2025] 20 invited talks at **international conferences** & 9 invited talks at **national conferences** & 22 invitations to **colloquia and seminars internationally**

- **OUTREACH & DISSEMINATION ACTIVITIES**

- Lecturer to rural Atlantic Canada school within the CISE-Atlantic project
- Interviews given to vulgarization journals & broadcasts (Nature news, La recherche, Le Monde, German National Radio, New scientist, Science et Vie Junior, Radio Canada etc)
- Author of the TED-Ed animation on antimatter and gravity: <http://ed.ted.com/lessons/if-matter-falls-down-does-antimatter-fall-up-chloe-malbrunot> (over 0.5 million online views)
- Guest for the podcast show “Solve it for kids” : <https://solveitforkids.com>