

Andrea Bersani's Curriculum Vitae

- Name: Andrea Bersani
- Academic qualifications: Degree in Physics achieved at Genova University, September the 19th, 2001
Ph.D. in Physics achieved at Genova University, April the 14th, 2005
- PostDoc positions: I had a grant, co-financed by EU and INFN, to work on target & magnet for the PANDA experiment. The grant started on July the 25th, 2005, and ended on July the 24th, 2007.
I had a contract, financed by EU to work with INFN, to work on PANDA magnet system. The grant started on October the 10th, 2007, and ended on September the 30th, 2008.
I had a temporary position as scientist at the University of Glasgow, to work on PANDA magnet system. The contract started on October the 1st, 2008 and ended on January the 31st, 2009.
I had a temporary position with INFN, financed by EU, to work on PANDA and on FAIR. The contract started on February the 2nd, 2009, and ended on November the 1st, 2010.
I had a grant with INFN to work on CUORE. The contract started on November the 2nd, 2010, and ended on October the 4th, 2012.
I had a temporary position with INFN to work on computing. The contract started on October the 5th, 2012 and ended December the 31st, 2016.
I have been a consultant for Fermi National Accelerator Laboratory, with a contract that started on February the 1st, 2017 and ended on April the 30th, 2017.
I had a temporary position as technology scientist at INFN Sezione di Genova, started on May the 3rd, 2017, and ended on September the 30th, 2018.
- Present position: I presently have a permanent position as technology scientist at INFN Sezione di Genova, started on October the 1st, 2018 - complete address: via Dodecaneso 33, 16146 Genova, Italy - +390103356655
- Language abilities: Italian, comprehension C2, spoken C2, written C2
English, comprehension C1, spoken C1, written C1
French, comprehension B1, spoken A2, written A2
German, comprehension A2, spoken A1, written A1
- Computer abilities: good knowledge of DOS/Windows and Mac OSX, deep knowledge of Unix/Linux

good knowledge of AutoCad, Ansoft Maxwell and ePhysics, Comsol Multiphysics, LabView, Root and other software used in engineering and physics
good knowledge of C/C++, FORTRAN and PASCAL
good knowledge of several digital imaging and web tool software (PhotoShop, Flash, DreamWeaver, GoLive...)
Attended to a course on GPFS filesystem management
Attended to a course on GRID infrastructure management
Attended to a course on RedHat Enterprise Virtualisation
Achieved RedHat Certified System Administrator certification in 2013

Scientific divulgation

I collaborated to the Festival della Scienza in 2003 and 2004, working on INFN installations
Since August 2013 I produce contents for Scientificast, scientific blog and podcast: the site is reached by roughly 1000 people per day and I produced more than 150 contributions
Since 2015 to 2018 I have been vice president of Pint of Science Italia, an organisation in charge of organising a nationwide science festival, growing from 5 to 12 thousands of attendees in these years, since 2015 I coordinate the edition for the city of Genova
Since end 2017 to end 2020 I have been the contact person for dissemination in INFN Sezione di Genova
I attended as speaker in many initiative, the last and most relevant being European Researchers Night (Genova 2022) and Lucca Comics and Games (Lucca 2022)

Additional information:

Italian citizenship
car driving licence
horse riding licence

Scientific Activities

Degree Thesis Activity

As a degree thesis activity, I made the first target spin asymmetry measurement in exclusive electroproduction of π^+ from a polarised protons target. The measurement was performed using the data of EG1 and EG2000 experiments, performed with the CLAS spectrometer at the Jefferson Laboratories (<http://www.jlab.org>). I also attended for a period to the data taking of EG2000 experiment, both taking some shift on the experiment and performing the raw data reconstruction for further analysis.

Ph.D. Activity

My Ph.D. activity was devoted to NEMO (NEutrino Mediterranean Observatory, <http://nemoweb.lns.infn.it>) and ANTARES (Astronomy with a Neutrino Telescope and Abyss environmental RESearch, <http://antares.in2p3.fr>): in particular, I studied from various points of view the possibility to extend the sensitivity of the detector to the low energy part of cosmic neutrinos spectrum. To this extent, using a simulation code, I studied how the various configurations of the optical modules in the detector produce different detection efficiencies as a function of the neutrino energy. In the second part of my

work I built one of these configurations using a set of oriented small photomultipliers (PMTs) housed inside a glass sphere and I built a test facility to measure its detection efficiency and angular acceptance for signals produced by atmospheric muons in water. This preliminary work is on the basis of the present design of KM3 detectors, which adopted the idea of segmented photocathodes. In the last part of my job I developed the procedure to evaporate a bialkali photocathode in view of the design of a large effective area, multianodic PMT.

PostDoc Activity

For several years after my PhD I worked on the PANDA experiment (<http://www-panda.gsi.de>), working on two tasks. I studied the design of the detector solenoid, a thin superconducting coil with its iron flux return yoke, making many models and calculations with proper software (Ansoft Maxwell and AutoDesk AutoCad), producing a final design completely compatible with all the detectors' requirements. In addition, I worked on the internal gas jet target: in particular, I also worked on the new slow control system, based on modern PLC technology, for the target itself.

My work has been recognised by the PANDA collaboration making me member of the Editorial Board of the TDR for the PANDA magnet system and for the PANDA target system. In addition, since the beginning of February 2009 to the end of 2011, I have been **member of the FAIR Joint Core Team Research Coordination Group**, a restricted coordination group in charge of supervising the experiments design and the overall progress of the laboratory development.

Since November 2010 I joined the CUORE collaboration. For this detector, I've been **responsible for the vibration suppression** in the cold mass suspension. This is essential to ensure the best energy resolution of the CUORE bolometers: the energy inlet, in any form, must be minimised to achieve this result. In these first months I did the first eigenfrequencies measurements on the mechanical structures on which the detector suspension is attached to find any mechanical short-circuit. In addition, I worked on the integration of the thermal joints integration inside the detector cryostat.

Since October 2012 I worked for the Computer Centre of INFN Genova Division, mainly on central UNIX/LINUX services. My work is mainly devoted to cloud computing, virtualisation and distributed storage, from the point of view of management and informatics infrastructure. I cooperated with my group in the maintenance and development of all the IT systems of our Computer Centre, ranging from network, to wi-fi, distributed storage, batch queues for massive computing, both based on the GRID infrastructure and on local basis, mail system, VPN, user support. A significant part of my time has been also devoted to web services, implementing SVNs, wiki pages, different CMSs, management interfaces for virtual machines.

Since July 2015 I started collaborating with the superconducting magnet design group in Genova, in particular on the development and testing of parallelised code for magnetic field calculation and on the follow-up of the ongoing activities of the group. My main task, on this side, has been the final mechanical and thermal calculations on the Transport Solenoid coils for the Mu2e experiment at FermiLab. I also followed the construction of the model module and its shrink fitting, in close collaboration of the FermiLab group in charge of the TS procurement, at ASG Superconductors premises, which is the magnet supplier. This activity has proceeded til the mid of 2020: I have been **responsible for witnessing all the activities at ASG Superconductors** premises and analysing all the mechanical potential issues in the various coils that are produced.

Present Activity

I am now working on different projects for superconducting magnets. In the framework of High Luminosity LHC, we are working on the recombination dipole MBRD, a double aperture, same polarity dipole in charge of making the trajectories of the beams intersect at the interaction point. Both a short model and a full scale prototype have been built and tested at CERN. The construction of a 6-pieces series has started. In this project I am **responsible for the industrial follow-up and on the mechanical characterisation of the magnet**. In parallel, since 2019, I started working on the design of a large solenoid magnet for the DUNE argon gas detector at the Near Detector, ND-GAr. This is a very large magnet, ~7m diameter, ~8m length warm bore, featuring a 0.5 T. The project is ongoing and I am now the **contact person for INFN**. Since November 2022 I am **deputy leader for the Genova branch of PNRR IRIS** project, for the complete renovation of the magnet and applied superconductivity laboratory in INFN Genova.

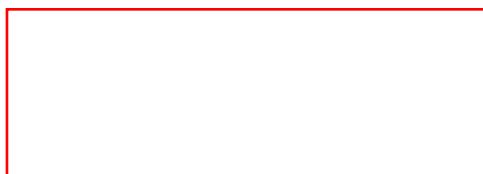
Teaching Activity

In the Academic years 2002/2003 and 2003/2004, I was a tutor for the undergraduate students in Physics, at Università degli Studi di Genova . In the Academic year 2004/2005 I gave lectures on general physics for the students in Biology at Università degli Studi di Genova. Since Academic year 2005/2006 I'm in the exam commission of laboratory of general physics for the students in Chemistry at Università degli Studi di Genova. During the Academic Year 2006/2007 I was in the exam commission of particle physics accelerators for the students in Physics at Università degli Studi di Genova. During the Academic Year 2019/2020 I was contract professor with Università degli Studi di Genova for the courses of General Physics for Informatics Engineering and since the same year of Laboratory 1 for Physics, at Università degli Studi di Genova. Since 2022/2023 I am contract professor for the course of Particle Accelerators for Physics, at Università degli Studi di Genova.

Attended Conferences and Workshops

I attended, presenting a personal contribute, to the following conferences and workshops:

Very Large Volume Neutrino Telescopes 06, Amsterdam 2006
Magnet Technology 20, Philadelphia 2007
Ring Imaging Cherenkov Counters 2007, Trieste 2007
Applied Superconductivity Conference 2008, Chicago 2008
Very Large Volume Neutrino Telescopes 08, Toulon 2008
European Conference on Applied Superconductivity 09, Dresden 2009
Very large Volume Neutrino Telescopes 09, Athens 2009
Nordic Conference in Nuclear Physics 2011, Stockholm 2011 (invited talk)
Particle and Nuclei International Conference 2011, Boston 2011
Magnet Technology 22, Marseille 2011
Applied Superconductivity Conference 2018, Seattle 2018
Applied Superconductivity Conference 2020, online 2020
Magnet Technology Conference 2021, Fukuoka and online, 2021



Articoli pubblicati dal 2018

- [1] Adam Abed Abud, Babak Abi, Roberto Acciarri, MA Acero, MR Adames, George Adamov, Mark Adamowski, David Adams, Marco Adinolfi, Antoni Aduszkiewicz, et al. Separation of track-and shower-like energy deposits in protodune-sp using a convolutional neural network. *The European Physical Journal C*, 82(10):903, 2022.
- [2] A Abed Abud, B Abi, R Acciarri, MA Acero, MR Adames, G Adamov, M Adamowski, D Adams, M Adinolfi, C Adriano, et al. A gaseous argon-based near detector to enhance the physics capabilities of dune. *arXiv preprint arXiv:2203.06281*, 2022.
- [3] A Abed Abud, B Abi, R Acciarri, MA Acero, MR Adames, G Adamov, M Adamowski, D Adams, M Adinolfi, C Adriano, et al. Highly-parallelized simulation of a pixelated lartpc on a gpu. *arXiv preprint arXiv:2212.09807*, 2022.
- [4] A Abed Abud, B Abi, R Acciarri, MA Acero, MR Adames, G Adamov, M Adamowski, D Adams, M Adinolfi, C Adriano, et al. Identification and reconstruction of low-energy electrons in the protodune-sp detector. *arXiv preprint arXiv:2211.01166*, 2022.
- [5] A Abed Abud, B Abi, R Acciarri, MA Acero, MR Adames, G Adamov, M Adamowski, D Adams, M Adinolfi, C Adriano, et al. Snowmass neutrino frontier: Dune physics summary. *arXiv preprint arXiv:2203.06100*, 2022.
- [6] A Abed Abud, B Abi, R Acciarri, MA Acero, MR Adames, G Adamov, M Adamowski, D Adams, M Adinolfi, A Aduszkiewicz, et al. Scintillation light detection in the 6-m drift-length protodune dual phase liquid argon tpc. *The European Physical Journal C*, 82(7):618, 2022.
- [7] A Abed Abud, Babak Abi, Roberto Acciarri, MA Acero, MR Adames, George Adamov, Mark Adamowski, David Adams, Marco Adinolfi, Cris Adriano, et al. Reconstruction of interactions in the protodune-sp detector with pandora. *arXiv preprint arXiv:2206.14521*, 2022.
- [8] Adam Abed Abud, Babak Abi, Roberto Acciarri, Mario Acero, Marcio Adames, George Adamov, Mark Adamowski, David Adams, Marco Adinolfi, Cris Adriano, et al. Dune offline computing conceptual design report. 2022.
- [9] A Acker, D Attié, S Aune, J Ball, P Baron, M Bashkanov, M Battaglieri, R Behary, F Benmokhtar, A Bersani, et al. The clas12 forward tagger. *Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment*, 959:163475, 2020.

- [10] DQ Adams, C Alduino, K Alfonso, FT Avignone III, O Azzolini, G Bari, F Bellini, G Benato, A Bersani, M Biassoni, et al. Update on the recent progress of the cuore experiment. *arXiv preprint arXiv:1808.10342*, 2018.
- [11] DQ Adams, C Alduino, K Alfonso, FT Avignone III, O Azzolini, G Bari, F Bellini, G Benato, A Bersani, M Biassoni, et al. Cuore: The first bolometric experiment at the ton scale for rare decay searches. *Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment*, 936:158–161, 2019.
- [12] DQ Adams, C Alduino, K Alfonso, FT Avignone III, O Azzolini, G Bari, F Bellini, G Benato, A Bersani, M Biassoni, et al. Cuore: The first bolometric experiment at the ton scale for the search for neutrino-less double beta decay. *Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment*, 958:162440, 2020.
- [13] C Alduino, K Alfonso, DR Artusa, FT Avignone III, O Azzolini, G Bari, F Bellini, G Benato, A Bersani, M Biassoni, et al. Search for neutrinoless β^+ β decay of ^{120}Te with cuore-0. *Physical Review C*, 97(5):055502, 2018.
- [14] C Alduino, K Alfonso, FT Avignone, O Azzolini, G Bari, F Bellini, G Benato, A Bersani, M Biassoni, A Branca, et al. The cuore and cuore-0 experiments at lngs. In *Journal of Physics: Conference Series*, volume 1056, page 012009. IOP Publishing, 2018.
- [15] C Alduino, K Alfonso, FT Avignone III, O Azzolini, G Bari, F Bellini, G Benato, A Bersani, M Biassoni, A Branca, et al. Study of rare nuclear processes with cuore. *International Journal of Modern Physics A*, 33(09):1843002, 2018.
- [16] C Alduino, K Alfonso, FT Avignone III, O Azzolini, G Bari, F Bellini, G Benato, A Bersani, M Biassoni, A Branca, et al. First results from the cuore experiment. In *Journal of Physics: Conference Series*, volume 1342, page 012002. IOP Publishing, 2020.
- [17] Chris Alduino, F Alessandria, K Alfonso, E Andreotti, C Arnaboldi, FT Avignone III, O Azzolini, M Balata, I Bandac, TI Banks, et al. First results from cuore: A search for lepton number violation via $0\nu\beta\beta$ decay of ^{130}Te . *Physical review letters*, 120(13):132501, 2018.
- [18] C Barschel, J Bernhard, A Bersani, C Boscolo Meneguolo, R Bruce, M Calviani, V Carassiti, F Cerutti, P Chiggiato, G Ciullo, et al. Cern yellow reports: Monographs, vol. 4 (2020): Lhc fixed target experiments: Report from the lhc fixed target working group of the cern physics beyond colliders forum. *CERN YELLOW REPORTS: MONOGRAPHS*, 4, 2020.
- [19] C Barschel et al. Report from the lhc fixed target working group of the cern physics beyond colliders forum. *CERN, Geneva, Switzerland*, 2019.

- [20] Colin Barschel, Francesca Galluccio, Christine Vollinger, Patrick Robbe, Mario Macrì, Erhard Steffens, Daniele Mirarchi, Roderik Bruce, Massimo Giovannozzi, Alessio Mereghetti, et al. Lhc fixed target experiments. Technical report, 2019.
- [21] Nazar Bartosik, Karol Krizka, Simone Pagan Griso, Chiara Aimè, Aram Apyan, Alessandro Bertolin, Alessandro Braghieri, Laura Buonincontri, Simone Calzaferri, Massimo Casarsa, et al. Simulated detector performance at the muon collider. *arXiv preprint arXiv:2203.07964*, 2022.
- [22] M Battaglieri, A Bersani, G Bracco, B Caiffi, A Celentano, R De Vita, L Marsicano, P Musico, F Panza, M Ripani, et al. Dark matter search in a beam-dump experiment (bdx) at jefferson lab–2018 update to pr12-16-001. *arXiv preprint arXiv:1910.03532*, 2019.
- [23] Andrea Bersani, Alan D Bross, Barbara Caiffi, Lea Di Noto, Pasquale Fabricatore, Stefania Farinon, Federico Ferraro, Donald V Mitchell, Riccardo Musenich, Colin Narug, et al. A complete magnetic design and improved mechanical project for the dune nd-gar solenoid magnet. *IEEE Transactions on Applied Superconductivity*, 32(6):1–4, 2022.
- [24] Andrea Bersani, Alan D Bross, Barbara Caiffi, Lea Di Noto, Pasquale Fabricatore, Stefania Farinon, Federico Ferraro, Donald V Mitchell, Riccardo Musenich, and Marco Pallavicini. A solenoid with partial yoke for the dune near detector. *IEEE Transactions on Applied Superconductivity*, 31(5):1–4, 2021.
- [25] Andrea Bersani, Barbara Caiffi, Roberto Cereseto, Pasquale Fabricatore, Stefania Farinon, Arnaud P Foussat, Oussama Id Bahmane, Filippo Levi, Thomas Sahner, and Ezio Todesco. The superconducting separation dipoles mbrd for the high luminosity upgrade of lhc: From short model to prototype. *IEEE Transactions on Applied Superconductivity*, 29(5):1–5, 2019.
- [26] L Bottura, D Aguglia, B Auchmann, T Arndt, J Beard, A Bersani, F Boatini, M Breschi, B Caiffi, X Chaud, et al. A work proposal for a collaborative study of magnet technology for a future muon collider. *arXiv preprint arXiv:2203.13998*, 2022.
- [27] Barbara Caiffi, Andrea Bersani, Roberto R Cereseto, Pasquale Fabricatore, Stefania Farinon, Lucio Fiscarelli, Arnaud Foussat, Filippo Levi, Franco Mangiarotti, Alessandra Pampaloni, et al. The development of the superconducting dipoles d2 for the high luminosity upgrade of lhc. *IEEE Transactions on Applied Superconductivity*, 31(5):1–5, 2021.
- [28] Alessio Caminata, Douglas Adams, Chris Alduino, Krystal Alfonso, Frank Avignone III, Oscar Azzolini, Giacomo Bari, Fabio Bellini, Giovanni Benato, Andrea Bersani, et al. Results from the cuore experiment. *Universe*, 5(1):10, 2019.

- [29] A Campani, DQ Adams, C Alduino, K Alfonso, FT Avignone, O Azzolini, G Bari, F Bellini, G Benato, A Bersani, et al. Results from the cuore experiment. *Il nuovo cimento C*, 42(4), 2019.
- [30] Lorenzo Cassina, C Alduino, K Alfonso, DR Artusa, FT Avignone, O Azzolini, G Bari, F Bellini, G Benato, A Bersani, et al. The cuore bolometric detector for neutrinoless double beta decay searches. In *Proceedings of International Conference on Technology and Instrumentation in Particle Physics 2017: Volume 2*, pages 202–207. Springer Singapore, 2018.
- [31] R Colalillo, C Aramo, F Alemanno, R Aloisio, C Altomare, R Antolini, C Arcaro, F Barbato, M Battaglieri, M Battisti, et al. “a scuola di astroparticelle”: a synergy between school education and scientific research. *POS PROCEEDINGS OF SCIENCE*, 395(18 March 2022):1–9, 2022.
- [32] Simone Copello, Christopher Alduino, Krystal Alfonso, Frank T Avignone III, Oscar Azzolini, Giacomo Bari, Fabio Bellini, Giovanni Benato, Andrea Bersani, Matteo Biassoni, et al. The commissioning of the cuore experiment: the mini-tower run. 2018.
- [33] JS Cushman, C Alduino, K Alfonso, FT Avignone, O Azzolini, G Bari, F Bellini, G Benato, A Bersani, M Biassoni, et al. Initial performance of the cuore detector. In *Journal of Physics: Conference Series*, volume 1342, page 012114. IOP Publishing, 2020.
- [34] V Dompè, DQ Adams, C Alduino, K Alfonso, FT Avignone, O Azzolini, G Bari, F Bellini, G Benato, A Bersani, et al. Perspectives of lowering cuore thresholds with optimum trigger. In *Journal of Physics: Conference Series*, volume 1643, page 012020. IOP Publishing, 2020.
- [35] A D’Addabbo, C Alduino, A Bersani, M Biassoni, C Bucci, A Caminata, L Canonica, L Cappelli, G Ceruti, N Chott, et al. The cuore cryostat. *Journal of Low Temperature Physics*, 193:867–875, 2018.
- [36] Stefania Farinon, Silvano Angius, Alberto Barutti, Andrea Bersani, Barbara Caiffi, Pasquale Fabbriatore, Lucio Fiscarelli, Arnaud Foussat, Michael Guinchard, Filippo Levi, et al. The mbrd dipoles for the luminosity upgrade at the lhc: from prototype tests to the series production. *IEEE Transactions on Applied Superconductivity*, 2023.
- [37] Arnaud Foussat, Pasquale Fabbriatore, Franco Mangiarotti, Juan Carlos Perez, Andrea Bersani, Barbara Caiffi, Stefania Farinon, Roberto Cereseto, Filippo Levi, Oussama Id’Bahmane, et al. The hl-lhc short model recombination d2 dipole: Cold test results and analysis. *IEEE Transactions on Applied Superconductivity*, 30(4):1–5, 2020.
- [38] S Hemmer, C Aramo, E Bissaldi, V Bocci, B Bottino, M Buscemi, L Caccianiga, G Cataldi, F Dimiccoli, F Di Pierro, et al. Discovering cosmic rays with oca: outreach activities for students and teachers. *POS PROCEEDINGS OF SCIENCE*, 395(18 March 2022):1–10, 2022.

- [39] S Jindariani, M Costa, V Shiltsev, I Vai, J Dickinson, E Barzi, L Lee, M Prioli, D Buttazzo, A Gianelle, et al. arxiv: Promising technologies and r&d; directions for the future muon collider detectors. Technical report, 2022.
- [40] F Levi, A Bersani, B Caiffi, R Cereseto, P Fabbricatore, S Farinon, A Foussat, F Lonardo, A Pampaloni, and E Todesco. The separation-recombination dipole mbrd for the high-luminosity lhc: From prototype to series. *IEEE Transactions on Applied Superconductivity*, 32(6):1–5, 2022.
- [41] Filippo Levi, A Ballarino, A Bersani, M Bracco, S Burioli, B Caiffi, E De Matteis, S Farinon, A Gagno, S Mariotto, et al. Updates on the mechanical design of falcond, a Nb_3Sn $\cos\theta$ short model dipole for fcc-hh. *IEEE Transactions on Applied Superconductivity*, 2023.
- [42] Laura Marini, Douglas Q Adams, Christopher Alduino, Krystal Alfonso, FT Avignone, Oscar Azzolini, Giacomo Bari, Fabio Bellini, Giovanni Benato, Andrea Bersani, et al. Results from the cuore experiment. *Proceedings of Science*, 332(1-4):64–77, 2018.
- [43] Valentina Novati, Christopher Alduino, Krystal Alfonso, Frank T Avignone III, Oscar Azzolini, Giacomo Bari, Fabio Bellini, Giovanni Benato, Andrea Bersani, Matteo Biassoni, et al. Cuore: first results and prospects. 2018.
- [44] Alessandra Pampaloni, Andrea Bersani, Barbara Caiffi, Pasquale Fabbricatore, Stefania Farinon, and Alessandro Maria Ricci. Preliminary design of the recombination dipole for future circular collider. *IEEE Transactions on Applied Superconductivity*, 29(5):1–4, 2019.
- [45] B Singh, W Erni, I Keshelashvili, B Krusche, M Steinacher, N Walford, B Liu, H Liu, Z Liu, X Shen, et al. Technical design report for the panda forward spectrometer calorimeter. 2019.
- [46] D Stratakis, N Mokhov, M Palmer, N Pastrone, T Raubenheimer, C Rogers, D Schulte, V Shiltsev, J Tang, A Yamamoto, et al. A muon collider facility for physics discovery. *arXiv preprint arXiv:2203.08033*, 2022.
- [47] E Todesco, H Bajas, M Bajko, A Ballarino, S Izquierdo Bermudez, B Bordini, L Bottura, G De Rijk, A Devred, D Duarte Ramos, et al. The high luminosity lhc interaction region magnets towards series production. *Superconductor Science and Technology*, 34(5):053001, 2021.
- [48] E Todesco, S Izquierdo Bermudez, A Foussat, E Gautheron, G Kirby, H Felice, JC Perez, J Fleiter, C Barth, A Milanese, et al. Status and challenges of the interaction region magnets for hl-lhc. *IEEE Transactions on Applied Superconductivity*, 2023.

- [49] C Tomei, K Alfonso, FT Avignone, O Azzolini, G Bari, F Bellini, G Benato, A Bersani, M Biassoni, A Branca, et al. First results from cuore. In *53rd Rencontres de Moriond on Electroweak Interactions and Unified Theories*, pages 327–332, 2018.
- [50] RU Valente, A Ballarino, A Bersani, M Bracco, S Burioli, B Caiffi, S Coelli, E De Matteis, S Farinon, A Gagno, et al. Optimization of electromagnetic design after winding tests for the nb $\text{-}\{3\}$ sn cos-theta dipole model for fcc-hh. *IEEE Transactions on Applied Superconductivity*, 2023.