
BIOGRAPHICAL SKETCH

NAME: Marco Giuseppe Pullia

POSITION TITLE: Head of the Technical Research Unit and Experimental Room at CNAO

EDUCATION/TRAINING

INSTITUTION AND LOCATION	DEGREE)	Completion Date MM/YYYY	FIELD OF STUDY
Università degli Studi di Milano	Laurea in Fisica	03/1992	Accelerator Physics
Université Claude Bernard - Lyon 1	PhD	10/1999	Accelerator Physics

A. Personal Statement

My research interests and the activities of the R&D department are in the improvement of hadrontherapy, both on the side of accelerator development and on the side of the improvement of treatment delivery and verification. The R&D Dept manages an “experimental room” which can be used to carry out experiments without occupying the treatment rooms. Such a room is available also for collaborations with external users and groups on many subjects ranging from range verification to detector development, from radiobiology to space research and so on. The experimental room is used also for developments of the beam distribution system in use also in the treatment rooms.

Besides these experimental activities, the department is active in designing upgrades and expansions of the CNAO facility. As an example the design of a superconducting gantry for carbon ions is ongoing in collaboration with CERN, INFN and MedAustron.

B. Positions and Honors

Positions and Employment

<i>Nov 1992 – Oct 1993</i>	<i>Scholarship holder (research grant)</i>
<i>Dec 1993 – Aug 1995</i>	<i>High school teacher</i>
<i>March 1994 – Aug 1995</i>	<i>Accelerator physicist at TERA Foundation (grant)</i>
<i>Sep 1995 – Sep 2022</i>	<i>Accelerator physicist at TERA Foundation (staff)</i>
<i>Sep 2022 - Sep 2023</i>	<i>Responsible of accelerator design at TERA Foundation</i>
<i>Sep 2023 – Aug 2010</i>	<i>Responsible of accelerator group at CNAO Foundation</i>
<i>Aug 2010 – Nov 2011</i>	<i>Responsible of accelerator commissioning and operation at CNAO Foundation</i>
<i>Nov 2011 – Mar 2019</i>	<i>Responsible of the R&D unit of the accelerator division at CNAO Foundation</i>
<i>Mar 2019 – Dec 2025</i>	<i>Director of the Research & Experimentation department at CNAO Foundation</i>
<i>Jan 2026 – today</i>	<i>Head of the Technical Research Unit and Experimental Room at CNAO Foundation</i>

Honors

Dec 2000	“Christoph Schmelzer Preis” for the contribution given to hadrontherapy with my PhD thesis.
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Patents

NO	
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Reviewer Experience

(List the journals where you have acted as reviewer.)

Nuclear Instruments and Methods

Physical Review Accelerators and Beams

IEEE Transactions

Physics in Medicine & Biology

Frontiers

Progress in Particle and Nuclear Physics

International Journal of Modern Physics

Physica Medica

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C. Contributions to Science

My research interests and the activities of the R&D department are in the improvement of hadrontherapy, both on the side of accelerator development and on the side of the improvement of treatment delivery and verification.

My main contributions are on the design of accelerators and in particular on slow extraction from synchrotrons and on ion gantries design.

1. Mazzucconi, D. , Agosteo, S. , Ferrarini, M. , Fontana, L. , Lante, V. , Pullia, M. and Savazzi, S. (2018), “MIXED PARTICLE BEAM FOR SIMULTANEOUS TREATMENT AND ONLINE RANGE VERIFICATION IN CARBON ION THERAPY: PROOF-OF-CONCEPT STUDY”. *Med. Phys.*, 45: 5234-5243. doi:10.1002/mp.13219
2. Toumia, Y., Pullia, M., Domenici, F. et al. “Ultrasound-assisted carbon ion dosimetry and range measurement using injectable polymer-shelled phase-change nanodroplets: in vitro study”. *Sci Rep* 12, 8012 (2022). <https://doi.org/10.1038/s41598-022-11524-x>
3. Romoli, G.; Di Fino, L.; Santi Amantini, G.; Boretti, V.; Lunati, L.; Berucci, C.; Messi, R.; Rizzo, A.; Albicocco, P.; De Donato, C.; et al. LIDAL, a Time-of-Flight Radiation Detector for the International Space Station: Description and Ground Calibration. *Sensors* 2023, 23, 3559. <https://doi.org/10.3390/s23073559>
4. Kostara E, Sportelli G, Belcari N, Camarlinghi N, Cerello P, Del Guerra A, Ferrero V, Fiorina E, Giraudo G, Morrocchi M, Pennazio F, Pullia M, Rivetti A, Rolo MD, Rosso V, Wheadon R, Bisogni MG., “PARTICLE BEAM MICROSTRUCTURE RECONSTRUCTION AND COINCIDENCE DISCRIMINATION IN PET MONITORING FOR HADRON THERAPY”, *Phys Med Biol.* 2019 Jan 21;64(3):035001. doi: 10.1088/1361-6560/aafa28
5. M. Pullia, “SYNCHROTRONS FOR HADRONTHERAPY”, (2009) *Reviews of Accelerator Science and Technology: Volume 2: Medical Applications of Accelerators*, pp. 157-178
6. L. Badano, M. Benedikt, P. Bryant, M. Crescenti, P. Holy, A. Maier, M. Pullia, S. Rossi, “PROTON-ION MEDICAL MACHINE STUDY (PIMMS) - PART I”, CERN/PS 99-010 (DI).
7. L. Badano, M. Benedikt, P. Bryant, M. Crescenti, P. Holy, A. Maier, M. Pullia, S. Rossi, “PROTON-ION MEDICAL MACHINE STUDY (PIMMS) - PART II”, CERN/PS 2000-007 (DR)
8. M. T. F. Pivi, L. Adler, G. Guidoboni, G. Kowarik, C. Kurfürst, C. Maderböck, M. Pavlovič, D. A. Prokopovich, M. G. Pullia, V. Rizzoglio, and I. Strašik, Commissioning of a gantry beamline with rotator at a synchrotron-based ion therapy center, *Phys. Rev. Accel. Beams* 27, 023503, 2024, doi: 10.1103/PhysRevAccelBeams.27.023503
9. M. Pavlovič, M.T.F. Pivi, I. Strašik, V. Rizzoglio, M.G. Pullia, L. Adler, G. Guidoboni, C. Maderböck, D. Prokopovich, and G. Kowarik, Rotatorlike gantry optics, *Phys. Rev. Accel. Beams* 27, 073502, DOI:

<https://doi.org/10.1103/PhysRevAccelBeams.27.073502>

10. Pullia, M. G., Benedetto, E., Dassa, L., de Matteis, E., Donetti, M., Felcini, E., Frisella, G., Karppinen, M., Kurfürst, C., Mariotto, S., Mereghetti, A., Mirandola, A., Pella, A., Perini, D., Piacentini, L., Pivi, M. T. F., Prioli, M., Ratkus, A., Rossi, L., ... Vretenar, M. (2023). *Explorative studies of an innovative superconducting gantry*. *Journal of Physics: Conference Series*, 2420(1). <https://doi.org/10.1088/1742-6596/2420/1/012099>

D. Past and Ongoing Research Support

(Complete the following table with the list of your projects, Add/delete rows if necessary.)

From To	Project Title	Funding Agency	Role in the project
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E. Experience as a research supervisor

2 PhD students + 1 ongoing

>15 undergraduates

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