CV: Mario Pietro Carante, PhD

Curriculum reso sotto forma di dichiarazione sostitutiva di atto di notorietà, ai sensi dell'art. 47 D.P.R. 28.12.2000 n. 445 (si allega fotocopia documento di identità valido). Il sottoscritto MARIO PIETRO CARANTE, nato a PAVIA, prov. PV, il 04/05/1988, residente in Viale della Libertà 17, *consapevole della responsabilità penale in cui può incorrere in caso di falsità in atti e dichiarazioni mendaci (art. 76 D.P.R. 28.12.2000 n. 445),*

D I C H I A R A quanto segue:

Personal Information

I got my **M.Sc.** title **in Physics in 2013** and my **PhD in Applied Physics in 2017** at the University of Pavia (title: *Biophysical modelling for cancer ion therapy;* supervisor: *F. Ballarini*). After more than four years of **post-doc**, I have currently a **Researcher (rtda)** position at the University of Pavia, Physics Department.

My research activity has been focused on the **biophysical mechanisms** governing the induction of different **radiobiological effects** by ionizing radiation, as well as on possible **medical (cancer therapy) and radiation protection (e.g. space radiation) applications** of these studies. In parallel, I have been working on optimizing the production of specific **radioisotopes for medical applications**, such as ^{52g}Mn, for PET/MRI MultiModal Imaging, and the isotopes of Tb, for theranostic applications.

The research activity has been performed in collaboration with many national and international institutions, including **CNAO** in Pavia *(A Facoetti, G Magro et al),* **HIT-Heidelberg Ion-beam Therapy centre** *(A Mairani et al),* **DKFZ-German Cancer Research Center** *(C Karger et al)*, **CERN** *(A Ferrari et al),* **ENEA** *(A Testa et al),* **PTB- Braunschweig** *(H Rabus et al)*, **University of Campinas** in Brazil *(M Bernal et al),* **AVO-ADAM** in Meyrin, Switzerland *(W Kozlowska et al)* and **Istituto Nazionale Tumori** in Milano *(T Rancati et al)*, as well as within different INFN research projects. I was part of a **wide international collaboration** which led to the definition of a new standard for DNA damage simulation *(Schuemann et al. 2019, Radiat Res 191, 76).*

Starting from 2013, I authored/co-authored **48 papers**, **39 of which in journals indexed in Scopus and/or ISI-WoS. In 20 of these papers I was first/last author and in 7 of them I was second author.** This allowed me to obtain the Italian ASN **(Abilitazione Scientifica Nazionale) for Associate Professor in 02/D1 (Applied Physics) and to pass 2 thresholds for ASN for Full Professor in 02/D1.**

Furthermore, I delivered **22 conference presentations and 2 invited talks at National and International Conferences and Schools**, for which I received **one best oral presentation award** and **four travel/young investigator awards**. I am **Local Responsible** (Section of Pavia) for the INFN project called MC-INFN/FLUKA, I am **Editor** of the *Journal of Radiation Oncology and Chemotherapy,* I am **Review Editor** of the peer-reviewed international journal *Frontiers in Oncology* (I.F. 5.738*)*, I was **Guest Editor** for three special issues of the peer-reviewed international journal *International Journal of Molecular Sciences (I.F. 6.628)*, and I served as a **Referee** for many international journals and editors. I have been member of the **Organizing Committee** of **2 Conferences**, as well as **4 International Schools**. I am a **member of the "Department Board" (Giunta di Dipartimento)** of the Physics Department of the University of Pavia and a **member of the "Joint Commission Students-Teachers"** (Commissione Paritetica Docenti-Studenti, CPDS).

Finally, I am **Professor** of several courses at the University of Pavia, I was **supervisor of 4 Thesis works in Physics and 2 in other Courses** and **co-supervisor of 4 Thesis works in Physics** (two MSc and two BSc) and I carried out **many teaching activities** in different courses at the University of Pavia, as well as several **outreach activities**.

A detailed description of the issues mentioned in this summary can be found below.

Current position

June 2021 – now: **Researcher (rtda)** at the University of Pavia, physics department, on "*Experimental and theoretical radiobiology and radiation biophysics*"

Previous positions

- December 2018 – May 2021: now: **Post-doc fellow** at INFN - Section of Pavia, on "*Extension and application of a biophysical model/MC code to predict cell death and chromosome damage in hadrontherapy*"

- December 2017 – November 2018: **Post-Doc fellow** at INFN – Section of Pavia, on "Application of a biophysical model/MC code for the prediction of biological effectiveness of p and C-ion hadrontherapy beams"

- June 2017 – November 2017: **Post-Doc fellow** at the University of Pavia, Physics Department, on "Modelization of radio-induced cell death and chromosome damage, with applications in hadrontherapy" – part II, funded by the Physics Department

- December 2016 – May 2017: **Post-Doc fellow** at the University of Pavia, Physics Department, on "Modelization of radio-induced cell death and chromosome damage, with applications in hadrontherapy" – part I, purposely funded by the FLUKA collaboration

Presentations

List of my conference presentations:

1. M.P. Carante, W. Kozlowska, A. Embriaco, G. Aricò, A. Ferrari, G. Magro, A. Mairani, R. Ramos, P. Sala, D. Georg and F. Ballarini, A new biophysical model for treatment-plan biological optimization in hadron therapy, *46th Annual Meeting of the European Radiation Research Society (ERRS2022)*, Catania, Italy, September 2022 (**poster**)
2. M. P. Carante, A. Embriaco, G. Aricò, A. Ferrari, C.P. Karger, W. Kozlowska, A. Mairani, S. Mein, R. Ramos, P. Sala and F. Ballarini, Predictions of the biological effectiveness of He-3 and He-4 beams by the BIANCA biophysical model, *Workshop SIRR on "Nuove Frontiere in Adroterapia: Meccanismi Radiobiologici e Prospettive"*, 10 September 2021 (**talk**)
3. M.P. Carante, International School on Innovative Radiotherapy Techniques (ISIRT), 20-24 September 2021, Title: *Physics of radionuclide production with simulations* (**invited talk**)
4. M.P. Carante, A. Embriaco, G. Aricò, A. Ferrari, C.P. Karger, W. Kozlowska, A. Mairani, S. Mein, R. Ramos, P. Sala and F. Ballarini, The BIANCA model provides reliable RBE predictions for different cells irradiated by protons, C-ions and He-ions in treatment-like scenarios, 59th Annual Conference of the Particle Therapy Co-operative Group (PTCOG59), 4-7 June 2021 (**poster**)
5. M.P. Carante, F. Barbaro, L. Canton, A. Colombi, A. Fontana, A new nuclear reaction route to produce Mn-52g with high purity for multi-modal imaging, *Applied Nuclear Physics Conference (ANPC)*, 12-17 September 2021 **(oral)**
6. M.P. Carante, G. Arico, A. Embriaco, A. Ferrari, C.P. Karger, W. Kozlowska, A. Mairani, P. Sala and F. Ballarini, Previsioni di RBE mediante il modello BIANCA a seguito di irraggiamento *in vitro* e *in vivo* con diversi fasci adroterapici, *XIX Convegno Nazionale SIRR*, 10-12 November 2020 **(oral)**
7. M.P. Carante, G. Arico, A. Embriaco, A. Ferrari, C.P. Karger, W. Kozlowska, A. Mairani, P. Sala and F. Ballarini, RBE prediction by the BIANCA model for *in vitro* and *in vivo* irradiation by different hadron therapy ion-beams, *45th Conference of the European Radiation Research Society (ERRS2020)*, Lund, Sweden, September 2020 **(oral)**

8. M.P. Carante, G. Aricò, A. Ferrari, W. Koslowska, A. Mairani and F. Ballarini, The BIANCA model and its applications for RBE predictions along hadrontherapy beams, MCMA 2019 (International Conference on Monte Carlo Techniques for Medical Applications), Montreal, Canada, 2019 (**oral**)
9. M.P. Carante, G. Aricò, A. Ferrari, W. Koslowska, A. Mairani and F. Ballarini, BIANCA: a biophysical model for RBE predictions along hadron therapy beams, *Workshop AIFM "Ricerca e innovazione in fisica medica e biomedica: la Lombardia risponde"*, Milano, 2019 (**poster**)
10. M.P. Carante, ESTRO (European Society for Radiotherapy and Oncology) 38 conference, Milano, Italy, 26-30 April 2019. Title: *RBE calculation for hadrontherapy by the BIANCA biophysical model* (**poster**)
11. M.P. Carante, C. Aimè, J.J. Tello Cajaio, F. Ballarini, Un'interfaccia tra FLUKA e il modello biofisico BIANCA per predire l'efficacia biologica di fasci adroterapici, *XVIII Convegno nazionale SIRR*, Roma, 2018 (**oral, *winner of the best presentation award***)
12. M.P. Carante, J.J Tello and F. Ballarini, A radiobiological database produced by the BIANCA model to predict the biological effectiveness of hadrontherapy beams, *15th Conference on Nuclear Reaction Mechanisms (NRM)*, Varenna, Italy, 2018 (**oral**)
13. M.P. Carante, Biomedical Physics Lombard Event 2018 (BiPLE), Pavia, 20-24 March 2018. Title: *Introduzione alla simulazione in ambito biosanitario* (***invited talk***)
14. M.P. Carante, Biomedical Physics Lombard Event 2018 (BiPLE), Pavia, 20-24 March 2018. Title: *Tutti i protoni sono uguali ma alcuni sono più uguali degli altri* (**poster**)
15. M.P. Carante, J.J. Tello and F. Ballarini, Predicting biological effects along hadrontherapy dose profiles by the BIANCA biophysical model, 17th International Symposium on Microdosimetry (MICROS 2017), Venezia, Italy, 2017 (**oral**)
16. M.P Carante and F. Ballarini, Full predictions of cell death and chromosome damage along hadrontherapy dose profiles by the BIANCA biophysical model, 43rd Annual Meeting of the European Radiation Research Society (ERRS 2017), Essen, Germany, 2017 (**oral**)
17. M.P Carante and F. Ballarini, A predictive version of the BIANCA biophysical model to calculate biological effects along hadrontherapy dose profiles, *2nd Italian Society for Radiation Research (SIRR) day*, Milano, Italy, 2017 (**oral**)
18. M.P. Carante, ESTRO (European Society for Radiotherapy and Oncology) 36 Conference, Vienna, Austria, 5-9 May 2017. Title: *Calculating ion-induced cell death and chromosome damage by the BIANCA biophysical model* (**poster**)
19. M.P. Carante and F. Ballarini, Effcacia biologica di un fascio terapeutico di protoni: un approccio modellistico, *XVII Convegno Nazionale SIRR*, Trento, 2016 (**oral**)
20. M.P. Carante and F. Ballarini, Calculating variations in proton biological effectiveness by the BIANCA biophysical model, *42nd Conference of the European Radiation Research Society*, Amsterdam, The Netherlands, 2016 (**poster**)
21. M.P. Carante and F. Ballarini, Biological effectiveness calculations for an eye melanoma proton beam: a modeling approach, *55th Annual Conference of the Particle Therapy Co-operative Group*, Prague, Czech Republic, 2016 (**poster**)
22. M.P. Carante and F. Ballarini, Modeling chromosome aberrations and cell death by light ions: biophysical mechanisms and hadrontherapy applications, *61st Annual Meeting of the Radiation Research Society, Weston*, Florida, 2015 (**poster**)
23. M. Carante and F. Ballarini, A biophysical model of cell death based on DNA cluster lesions and chromosome aberrations, *5th International Congress of Radiation Research*, Kyoto, Japan, 2015 (**poster**)
24. M. Carante and F. Ballarini, Un modello biofisico di morte cellulare basato sulle lesioni a cluster del DNA e le aberrazioni cromosomiche: implicazioni sui meccanismi e applicazioni nell'ambito dell'adroterapia, *Radiazioni Ricerca e Applicazioni*, XVII-3 2014 (**oral**)

List of my presentations at collaboration meetings

- FLUKA Collaboration meeting, Online, 3-4 December 2020. Title: *Update on the predictive capability of the BIANCA/FLUKA interface for He-ion irradiations* (**talk**)
- FLUKA Collaboration meeting, INFN-Milano, Italy, 6 February 2020. Title: *Interface of FLUKA with the BIANCA biophysical model* (**talk**)
- METRICS (MultimodalpET/mRi Imaging with Cyclotron-produced 52/51 Mn and stable paramagnetic Mn iSotopes)) Collaboration meeting, INFN-Legnaro, Italy, 4 December 2019. Title: *Nuclear reaction modeling for METRICS* (**talk**)
- FLUKA Collaboration meeting, INFN-Milano, Italy, 20-21 December 2017. Title: *Update on the interface between the radiobiological model BIANCA and FLUKA* (**talk**)
- FLUKA Collaboration meeting, CERN, Geneve, Switzerland, 29-30 May 2017. Title: *Towards an interface between FLUKA and the BIANCA biophysical model* (**talk**)
- MC-INFN (Monte Carlo for INFN) Collaboration meeting, Roma, Italy, 7 April 2017. Title: *A coupling between FLUKA and the BIANCA biophysical model* (**talk**)
- FLUKA Collaboration meeting, CERN, Geneve, Switzerland, 17-18 October 2016. Title: *The BIANCA model/MC code for cell death and chromosome damage: main features and applications for hadrontherapy* (**talk**)
- Collaboration Meeting for the AEgIS (Antihydrogen Experiment: Gravity, Interferometry, Spectroscopy) experiment, CERN, Geneva, June 2013. Title: *Reconstruction algorithms for the scintillating fibers detector* (**talk**)

Awards and honors

- ***Abilitazione Scientifica Nazionale (ASN) per professore di seconda fascia (associato)***

Editorial activity:

- **Outstanding Reviewer Awards 2022 by IOP** (Institute Of Physics) for the peer-reviewed international journal Physics in Medicine and Biology (PMB) (2023)

- **Recognition as IOP Trusted Reviewer** “in recognition of an exceptionally high level of peer review competency” (2023)

- **Recognition as Trusted Reviewer** for the peer-reviewed international journal International Journal of Molecular Sciences (IMDP) (2023)

- **Review Editor** for the peer-reviewd international journal “Frontiers in Oncology” (Impact Factor: 5.738, indexed in Scopus and ISI-WoS), 2022 – now

- **Guest Editor** for a special issue of the peer-reviewed international journal “International Journal of Molecular Sciences” (Impact Factor: 6.628, indexed in Scopus and ISI-WoS), September 2019 – July 2023

- **Guest Editor** for a special issue of the peer-reviewed international journal “International Journal of Molecular Sciences” (Impact Factor: 6.628, indexed in Scopus and ISI-WoS), 2022

- **Editor** of the peer-reviewed international journal “Journal of Radiation Oncology and Chemotherapy”, June 2020 – now

- **Guest Editor** for a special issue of the peer-reviewed international journal “International Journal of Molecular Sciences” (Impact Factor: 6.628, indexed in Scopus and ISI-WoS), September 2019 – July 2020

- **Reviewer** for the peer-reviewed international journal *Scientific Reports* (Impact Factor: 4.9, indexed in ISI/WoS and Scopus)

- **Reviewer** for the peer-reviewed international journal *PLOS Computational Biology* (Impact Factor: 4.779, indexed in ISI/WoS and Scopus)

- **Reviewer** for the peer-reviewed international journal Zeitschrift fuer Medizinische Physik (Impact Factor: 2, indexed in ISI/WoS and Scopus)

- **Reviewer** for the peer-reviewed international journal *Physica Medica* (Impact Factor: 2.9, indexed in ISI/WoS and Scopus)

- **Reviewer** for the peer-reviewed international journal *Physics in Medicine and Biology* – PMB (Impact Factor: 3.902, indexed in ISI/WoS and Scopus)

- **Reviewer** for the peer-reviewed international journal *Medical Physics* (Impact Factor: 4.560, indexed in ISI/WoS and Scopus)

- **Reviewer** for the peer-reviewed international journal *Frontiers in Physics* (Impact Factor: 3.560, indexed in ISI/WoS and Scopus)

- **Reviewer** for the international editor *Elsevier*

- **Reviewer** for the peer-reviewed international journal *International Journal of Molecular Sciences* (Impact Factor: 6.628, indexed in ISI/WoS and Scopus)

- **Reviewer** for the peer-reviewed international journal *Cancers* (Impact Factor: 6.639, indexed in ISI/WoS and Scopus)

- **Reviewer** for the peer-reviewed international journal *Quantum Beam Science* (Indexed in ESCI-WoS), October 2020

- **Reviewer** for the peer-reviewed international journal *Radiation Physics and Chemistry* (Impact Factor: 2.226, indexed in ISI/WoS and Scopus), July 2020

- **Reviewer** for the peer-reviewed international journal *Radiation and Environmental Biophysics* (Impact Factor: 1.474, indexed in Scopus and ISI-WoS), December 2019

- **Reviewer** for the peer-reviewed international journal *Translational Cancer Research* (Impact factor: 0.986, indexed in Scopus), May 2019

Organization of conferences and schools:

- **Member of the Organizing Committee** of the *XI Geant4 International School*, Pavia 2024

- **Member of the Organizing Committee** of the *X Geant4 International School*, Pavia 2023

- **Member of the Organizing Committee** of the *International School on Advanced Imaging Techniques – ISAIT*, Pavia 2022

- **Member of the Organizing Committee** of the *International School on Innovative Radiotherapy Techniques – ISIRT*, Pavia 2021 (http://fisica.unipv.it/ISIRT2020/index.htm)

- **Member of the Local Committee** of the *VIII Young Researchers BNCT Meeting*, Pavia, Italy, September 2015

- **Member of the Organizing Committee** of the *XVI National Congress of the Italian Society for Radiation Research*, Pavia, Italy, November 2014

Awards:

- **Best Oral Presentation Award** at the *XVIII National Conference of the Italian Society for Radiation Research,* Roma, Italy, 10-13 September 2018

- **Young Investigator Award** to present a contribution at the *17th International Symposium on Microdosimetry*, November 5-10, 2017, Venice, Italy

- **Young Investigator Award** to present a contribution at the *43rd Annual Meeting of the European Radiation Research Society (ERR 2017),* Essen, Germany

- **Travel Award** to present a contribution at the *42nd Annual Meeting of the European Radiation Research Society (ERRS2016)*, Amsterdam, The Netherlands, September 2016

- **Travel Award** to present a contribution at the *15th International Congress of Radiation Research (ICRR)*, Kyoto, Japan, May 2015

Supervisor of Thesis works:

- **Supervisor** for the **MSc Thesis in Physics** by Alice Casali, Università degli Studi di Pavia, in progress. Title: *Development of a mechanistic model for the prediction of Normal Tissue Complication Probability in cancer hadrontherapy*

- **Supervisor** for the **MSc Thesis in Nuclear Engineering** by Elena Bernardini, Politecnico di Milano, in progress. Title: *Investigation of schielding materials to protect astronauts from Solar Particle Events*

- **Supervisor** for the **Bachelor Thesis in Physics** by Giulia Migliavacca, Università degli Studi di Pavia, in progress. Title: Modelli fenomenologici e meccanicistici di NTCP

- **Supervisor** of the **Bachelor Thesis in Radiology and Radiotherapy** by Edoardo Vona, Università degli Studi di Pavia, November 2023. Title: La radioterapia FLASH: una possibile rivoluzione in campo radioterapico

- **Supervisor** of the **Bachelor Thesis in Radiology and Radiotherapy** by Luca Ardito, Università degli Studi di Pavia, June 2023. Title: Nuove frontiere in adroterapia: l'utilizzo di ioni innovativi

- **Supervisor** of the **Bachelor Thesis in Physics** by Giacomo Frigerio, Università degli Studi di Pavia, June 2023. Title: Stability of the Lagrangian points in the three-body problem

- **Supervisor** of the **Bachelor Thesis in Physics** by Milo Repossi, Università degli Studi di Pavia, March 2023. Title: Non-collision singularities in the gravitational three body scattering problem

- **Supervisor** for the **Bachelor Thesis in Physics** by Aurora Madonnini, Università degli Studi di Pavia, December 2022. Title: *Ioni innovativi per l'adroterapia*

- **Supervisor** for the **Bachelor Thesis in Physics** by Martina Scagni, Università degli Studi di Pavia, December 2022. Title: *Terbio: il "coltellino svizzero" della medicina nucleare*

- **Co-supervisor** for the **MSc Thesis in Physics** by Alessandro Colombi, Università degli Studi di Pavia, February 2020. Title: *Nuclear reaction modelling of ^{52g}Mn production for MultiModal Imaging applications*

- **Co-supervisor** for the **MSc Thesis in Physics** by Laura Pederzoli, Università degli Studi di Pavia, May 2016. Title: *Efficacia degli ioni carbonio utilizzati in adroterapia: simulazioni ed esperimenti di morte cellulare e danno cromosomico*

- **Co-supervisor** for the **Bachelor Thesis in Physics** by Rachele Danieli, Università degli Studi di Pavia, September 2018. Title: *La proton-terapia associata alla reazione di fusion ^{11}B(p,3α)*

- **Co-supervisor** for the **Bachelor Thesis in Physics** by Chiara Aimè, Università degli Studi di Pavia, September 2017. Title: *Modellizzazione dell'efficacia biologica degli ioni carbonio In adroterapia*

Other:

- **Member of the Executive Board** (Consiglio Direttivo) of the Italian Society for Radiation Research (SIRR)

- **Member of the "Joint Commission Students-Teachers"** (Commissione Paritetica Docenti-Studenti, CPDS), 2022-now

- **Member of the "Department Board"** of the Physics Department of the University of Pavia, 2022-now

- **Member** of the working group for the **realization of the new websites for the Department of Physics, Bachelor and Master Courses in Physics** of the University of Pavia, 2021-now

- November 2020: **Chairman** for the Poster Session (Clinical Applications section) at the XIX National Conference of the Italian Society for Radiation Research (SIRR), 10-12 November 2020.

- **Member of the working group "Pillole di Fisica"** of the Physics Department of the University of Pavia

- April 2016 – now: **Member of the European Radiation Research Society** (ERRS)

- November 2014 – now: **Member of the Italian Society for Radiation Research** (SIRR)

Research projects

- **Local responsible for the INFN project MC-INFN/FLUKA**, 2022 – now

- **Participant of the INFN project Geant4INFN (**P.I.: P. Cirrone), 2024 - now

- **Participant of the INFN project BIOHOT (**P.I.: L. Manti), 2023 - now

- **Local Responsible** for the Third Mission INFN project "Pint of Science", 2021 – now

- **Participant of the INFN project AIM** (Artificial Intelligence in Medicine, P.I.: A. Retico), 2022

- **Member of NECTAR** (NEutron Capture-enhanced Treatment of neurotoxic Amyloid aggRegates), a research project approved by EU in the framework of the call H2020-FETOPEN-2018-2020 (FET Open – Novel ideas for radically new technologies Type of action: RIA-Research and Innovation Action) (P.I. N. Protti, University of Pavia)

- **Member of RENOVATE** (*Renovating BNCT - promoting efficient treatments for cancers deemed incurable through the use of normalized protocols, improved boron carriers and hospital-based accelerators*, P.I.: W. Sauerwein, Essen, Germany), a research network for BNCT submitted to the **EU Commission** in the frame of the RISE program

- starting from January 2021: **participant of the INFN project REMIX (**P.I.: G. Pupillo , INFN-LNL)

- January 2019 – 2021: **participant of the INFN project METRICS (***Multimodal pET/mRi Imaging with Cyclotron-produced 52/51 Mn and stable paramagnetic Mn iSotopes*, P.I.: J. Esposito, INFN-LNL)

- November 2018-now: **participant of the project** "Radiation Damage, Proliferation and Cell Recovery Analysis of in vitro Human Skeletal Muscle Cells after Conventional and Heavy Ion Irradiation: Experimental Data and Monte Carlo Simulation", funded by **INT** (National Cancer Institute, Milano) (P.I.: A. Cicchetti)

- November 2016 - now: **participant of the INFN project MC-INFN** (*Monte Carlo for INFN*, P.I.: P. Sala, INFN-Milano)

- January 2015 – December 2018: **participant of the INFN project ETHICS** (*pre-clinical Experimental and THeoretical studies to Improve treatment and protection by Charged particleS*, P.I.: L. Manti, University of Naples "Federico II")

- November 2013 – December 2014: **participant of the INFN project NeTTuNo** (*NEuTron capTUre therapy of thoracic tumors with New fOrmulations*, P.I.: S. Altieri, University of Pavia)

- September 2012 – April 2013: **participant of the CERN project AEgIS** (*Antihydrogen Experiment: Gravity, Interferometry, Spectroscopy,* P.I.: M. Doser, CERN)

Teaching activity

- **Reference Professor for the *Geant4 and Geant4-DNA course***, PhD course, University of Pavia (2023-24)

- **Professor of *Physical sensors and systems for biomedical imaging*** (24 hours), Master Degree in Artificial Intelligence for Science and Technology, collaboration between University of Pavia, University of Milano and University of Milano-Bicocca (2023-24)

- **Professor of *Informatics for Physics*** (24 hours), Bachelor course in Physics, University of Pavia (2022-23)

- **Professor of *Problem Solving*** (8 hours/year), Bachelor course in Physics, University of Pavia (2021-22, 2022-23, 2023-24)

- **Professor of *Radioprotection*** (8 hours/year), Bachelor course in "Professioni Sanitarie Tecniche" of the Medicine Faculty, University of Pavia (2021-22, 2022-23, 2023-24)

- **Professor of *Medical Radiobiology*** (16 hours/year), Bachelor course in Techniques in Radiology and Radiotherapy, University of Pavia (2021-22, 2022-23, 2023-24)

- **Professor of *Electric and Electronic Measurements*** (16 hours/year), Bachelor course in Techniques in Radiology and Radiotherapy, University of Pavia (2021-22, 2022-23, 2023-24)

- **Seminars for *Nuclear Physics*** (4 hours/year), Bachelor course in Physics, University of Pavia (2021-22, 2022-23, 2023-24)

- **Didactic seminars for *Fundamental of Physics***, Bachelor course in Natural Sciences, University of Pavia (2020/21)

- **Didactic seminars for *Informatics Methods for Physics***, Bachelor course in Physics, University of Pavia (2019/20)

- **Didactic seminars for *Experimental Physics*** *(18 hours)*, Bachelor course in Biotechnology, University of Pavia (2018/19)

- **Didactic seminars for *Fundamental of Physics***, Bachelor course in Natural Sciences, University of Pavia (2018/19)

- **Didactic seminars for *Experimental Physics*** *(18 hours)*, Bachelor course in Biotechnology, University of Pavia (2017/18)

- **Didactic seminars for *Fundamental of Physics***, Bachelor course in Natural Sciences, University of Pavia (2017/18)

- **Tutor for *Mechanics*** (20 hours), Bachelor course in Physics, University of Pavia (2016/17)

- **Didactic seminars for *Experimental Physics*** *(18 hours)*, Bachelor course in Biotechnology, University of Pavia (2016/17)

- **Didactic seminars for *Fundamental of Physics***, Bachelor course in Natural Sciences, University of Pavia (2016/17)

- **Tutor for *Applied Physics***, Bachelor courses in "Professioni Sanitarie Tecniche" of the Medicine Faculty, University of Pavia (2015/16)

- **Didactic seminars for *Fundamental of Physics***, Bachelor course in Natural Sciences, University of Pavia (2015/16)

- **Tutor for *Applied Physics***, Bachelor courses in "Professioni Sanitarie Tecniche" of the Medicine Faculty, University of Pavia (2014/15)

- **Didactic seminars for *Fundamental of Physics***, Bachelor course in Natural Sciences, University of Pavia (2014/15)

Outreach activities

- Talk for "**Modern physics meetings**" organized by the Physics Department of the University of Pavia: *Radionuclidi medicali: infiltrati speciali*

- Talk for the Italian "**Famelab**" Educational Contest, February 2019. Title: *Galileo che lancia cose*

- Talk for the Italian "**Famelab**" Educational Contest, November 2018. Title: *Il paradosso di Olbers*

- Talk for the international "**Pint of Science Festival**", 14-16 May 2018. Title: *Adroterapia: l'insospettabile utilità delle particelle atomiche*

- Seminars and posters for the "**European Researchers Night**", 2018. Title: *Il tiro ad effetto e le sue applicazioni alla vita quotidiana*

- Seminars and posters for the "**European Researchers Night**", 2017. Title: *The prestige*

- Seminars and posters for the "**European Researchers Night**", 2016. Title: *The butterfly effect*

- ***Famelab* educational talks** for high-school students, 2016. Title: *Danni da radiazione e adroterapia per l'occhio*

- **Talk** for the "Tuesday Meetings" organized by the Physics Department of the University of Pavia: *Ionizing radiations: biological effects and biomedical applications*, December 2015

- ***Famelab* educational talks** for high-school students, 2015. Title: *Simulazioni in adroterapia*

Education and training

September 2020 – **Machine Learning** Online Course by **Stanford University**

16/02/2017 – PhD degree in Physics
- Athenaeum: University of Pavia
- Thesis title: *Biophysical modelling for cancer ion therapy*
- Supervisor: Francesca Ballarini
- Description: a biophysical model, implemented as a Monte Carlo code, was developed to simulate the effects of ionizing radiation on biological tissues. The model was applied in the framework of cancer hadrontherapy, focusing on the evaluation of the biological effectiveness of protons along therapeutic beams

June 2016 – International Course on *Modelling radiation effects from initial physical events – Learning modelling approaches and techniques in radiation biophysics and radiobiology research, from basic mechanisms to applications* (coordinated by A Ottolenghi, University of Pavia, in the framework of DoReMi's E&T European program)

12-13 May 2016 – Workshop: *La Radiobiologia in INFN*, *Trento, Italy*

29 April 2015 – *Seminar on Research Activities in Hadrontherapy*, *CNAO, Pavia, Italy*

1-4 October 2014 – *International School on Heavy Ions – III Course on Hadrons in Therapy and Space*, *Erice, Italy*

19-20 September 2014 – Workshop: *Hadrontherapy: a new frontier for cancer treatment*, *CNAO, Pavia, Italy*

17-18 December 2013 - Workshop: *Status and Future Perspectives of Charged Particle Therapy*, *CNAO, Pavia, Italy*

30/04/2013 – Master degree in Physics
- Athenaeum: University of Pavia
- Course: Nuclear and Subnuclear Physics
- Thesis title: *Neural Network Reconstruction Algorithms for Annihilation Events in an Antigravity Experiment*

- Supervisor: Alberto Rotondi; Cosupervisors: Andrea Fontana and Pablo Genova
- Description: within the Data Analysis Framework ROOT by CERN, based on C++, I developed a neural network able to reconstruct particle tracks with the aim of identifying the antihydrogen annihilation vertex in the AEgIS experiment, in order to make possible the first direct gravity measurement on neutral antimatter
- Grade: 110/110

25/02/2011 – Bachelor degree in Physics
- Athenaeum: University of Pavia
- Thesis title: *Terrestrial Gamma-ray Flashes*
- Supervisor: Patrizia Caraveo; Cosupervisor: Andrea de Luca
- Description: I gathered in a unique work most of the observations, studies and conclusions on Terrestrial Gamma-ray Flashes (TGFs), bursts of photons originating in the terrestrial atmosphere in association with thunderstorms
- Grade: 106/110

12/07/2007 – Scientific High School degree
- Institute: Liceo Scientifico Niccolò Copernico
- Grade: 100/100

Personal skills and competences

English Language
- Speaking: Good
- Writing: Advanced
- Certificates: First Certificate in English; Preliminary English Test (PET)

Informatic skills
- Operative Systems: Linux –Ubuntu; Windows
- Programming languages: Python, C++, FORTRAN
- ROOT Data Analysis framework
- Monte Carlo codes, FLUKA and PHITS radiation transport codes
- Machine Learning and Neural Networks
- LaTeX language
- Office package

Bibliometric indices (Scopus, February 2024)

Publications – 10 years = 39 Citations – 15 years = 425 h-index – 15 years = 14

Threshold values for ASN for Full Professor (I Fascia):

Publications – 10 years = 29 Citations – 15 years = 601 h-index – 15 years = 14

Papers in journals indexed in ISI-WoS and/or Scopus

1. J. Storey, C.Canali, S.Aghion, O.Ahlén, C.Amsler, A.Ariga, T.Ariga, A.S.Belov, G. Bonomi, P.Bräunig, J.Bremer, R.S.Brusa, G.Burghart, L.Cabaret, M.Carante, R. Caravita, F.Castelli, G.Cerchiari, S.Cialdi,

D.Comparat, G.Consolati, L.Dassa, S. DiDomizio, L.DiNoto, M.Doser, A.Dudarev, A.Ereditato, R.Ferragut, A.Fontana, P.Genova, M.Giammarchi, A.Gligorova, S.N.Gninenko, S.Haider, S.D. Hogan, T.Huse, E.Jordan, L.V.Jørgensen, T.Kaltenbacher, J.Kawada, A.Kellerbauer, M.Kimura, A.Knecht, D.Krasnický, V.Lagomarsino, A.Magnani, S. Mariazzi, V.A.Matveev, F.Merkt, F.Moia, G.Nebbia, P.Nédélec, M. K. Oberthaler, N.Pacifico, V.Petráček, C.Pistillo, F.Prelz, M.Prevedelli, C. Regenfus, C.Riccardi, O.Røhne, A.Rotondi, H.Sandaker, P.Scampoli, M.A. SubietaVasquez, M. Špaček, G.Testera, D.Trezzi, R.Vaccarone, S.Zavatarelli, Particle tracking at 4K: The Fast Annihilation Cryogenic Tracking (FACT) detector for the AEgIS antimatter gravity experiment, *Nuclear Instruments and Methods A* 732:437-441 (2013)

2. F. Ballarini, S. Altieri, S. Bortolussi, M. Carante, E. Giroletti and N. Protti, The BIANCA model/code of radiation-induced cell death: application to human cells exposed to different radiation types, *Radiat Environ Biophys*, 53:525-533 (2014)
3. F. Ballarini, S. Altieri, S. Bortolussi, M. Carante, E. Giroletti and N. Protti, The role of DNA cluster damage and chromosome aberrations in radiation-induced cell killing: a theoretical approach, *Radiat Prot Dosim*, 166:75-79 (2015)
4. M.P. Carante, S. Altieri, S. Bortolussi, I. Postuma, N. Protti and F. Ballarini, Modelling radiation-induced cell death: role of different levels of DNA damage clustering, *Radiat Environ Biophys*, 54:305–316 (2015)
5. L. Cansolino, A.M. Clerici, C. Zonta, P. Dionigi, G. Mazzini, R. Di Liberto, S. Altieri, F. Ballarini, S. Bortolussi, M.P. Carante, M. Ferrari, S.J. Gonz alez, I. Postuma, N. Protti, G.A. Santa Cruz and C. Ferrari, Comparative study of the radiobiological effects induced on adherent vs suspended cells by BNCT, neutrons and gamma rays treatments, *Applied Radiation and Isotopes*, 106:226–232 (2015)
6. M.P Carante and F. Ballarini, Modelling the induction of cell death and chromosome damage by therapeutic protons, Proc. 14th Int. Conf. Nuclear Reaction Mechanisms, Varenna (Italy), June 15th – 19th, 2015, Edited by F. Cerutti, M. Chadwick, A. Ferrari, T. Kawano and P. Schoofs, *CERN-Proceedings-2015-001*, CERN, Geneva, 6:361-368 (2015)
7. M.P Carante and F. Ballarini, Calculating Variations in Biological Effectiveness for a 62 MeV Proton Beam, *Front. Oncol*., 6, article no. 76, doi: 10.3389/fonc.2016.00076 (2016)
8. F. Ballarini and M.P Carante, Chromosome aberrations and cell death by ionizing radiation: evolution of a biophysical model, *Radiation Physics and Chemistry*, 128:18-25 (2016)
9. M.P. Carante and F. Ballarini, Modelling cell death for cancer hadrontherapy, *AIMS Biophysic,* 4(3): 465-490 (2017)
10. J.J. Tello, M.P. Carante, M. Bernal and F. Ballarini, Proximity effects in chromosome aberration induction by low-LET ionizing radiation, *DNA Repair*, 58:38-46 (2017)
11. S. Bortolussi, N. Protti, M. Ferrari, I. Postuma, S. Fatemi, M. Prata, F. Ballarini, M.P. Carante, R. Farias, S.J. Gonz alez, M. Marrale, S. Gallo, D. Nigg and S. Altieri, Experimental characterization of the thermal neutron irradiation facility at the TRIGA reactor of the University of Pavia, *Nuclear Instruments and Methods B*, 414:113-120 (2017)
12. M.P. Carante and F. Ballarini (2017), Calculating ion-induced cell death and chromosome damage by the BIANCA biophysical model. *Radiotherapy and Oncology,* 123, S866-S867
13. J.J. Tello, M.P. Carante, M. Bernal and F. Ballarini, Proximity effects in chromosome aberration induction: Dependence on radiation quality, cell type and dose, *DNA Repair*, 64:45-52 (2018)
14. M.P Carante, C. Aimè, J.J Tello and F. Ballarini, BIANCA, A biophysical model of cell survival and chromosome damage by protons, C-ions and He-ions at energies and doses used in hadrontherapy, *Physics in Medicine and Biology*, 63(7):075007, 14 pp (2018)
15. A. Testa, F. Ballarini. U. Giesen, O.M. Gil, M.P. Carante, J.J Tello, F. Langner, H. Rabus, V. Palma, M. Pinto, C. Patrono, Analysis of radiation-induced chromosomal aberrations on a cell-by-cell basis after α-particle microbeam irradiation: experimental data and simulations, *Radiation Research,* 189(6):597-604 (2018)
16. M.P. Carante, J.J. Tello and F. Ballarini, Predicting biological effects along hadrontherapy dose profiles by the BIANCA biophysical model. *Radiation Protection Dosimetry*, 183(1-2):111–115 (2019)
17. J. Schuemann, A. McNamara, J. W. Warmenhoven, N. T. Henthorn, K. Kirkby, M. J. Merchant, S. Ingram, H. Paganetti, KD. Held, J. Ramos-Mendez, B. Faddegon, J. Perl, D. Goodhead, I. Plante, H.

Rabus, H. Nettelbeck, W. Friedland, P. Kundrat, A. Ottolenghi, G. Baiocco, S. Barbieri, M. Dingfelder, S. Incerti, C. Villagrasa, M. Bueno, M. A. Bernal, S. Guatelli, D. Sakata, J. M. C. Brown, Z. Francis, I. Kyriakou, N. Lampe, F. Ballarini, M. P. Carante, M. Davidkova, V. Štepán, X. Jia, F. A. Cucinotta, R. Schulte, R. Stewart, D. Carlson, S. Galer, Z. Kuncic, S. LaCombe, J. Milligan, S. H. Cho, T. Inaniwa, T. Sato, and S. J. McMahon, A standard data format for DNA damage (SDD), *Radiation Research,* 191(1), 76-92 (2019)

18. M.P. Carante and F. Ballarini (2019), RBE calculation for hadrontherapy by the BIANCA biophysical model, *Radiotherapy and Oncology,* 133, S594-S595
19. F. Ballarini, M. P. Carante, J. J. Tello Cajiao, M. A. Bernal Rodriguez, Biophysical modelling of proximity effects in chromosome aberration production. *Nuovo Cimento C*, 41(6), art. No. 205, 8 pp (2019)
20. MP Carante, An interface between the FLUKA transport code and the BIANCA biophysical model to predict the biological effectiveness of hadrontherapy beams. *Nuovo Cimento C*, 41(6), art. No. 210, 8 pp (2019)
21. M.P. Carante, J.J. Tello Cajiao and F. Ballarini, A radiobiological database produced by the BIANCA model to predict the biological effectiveness of hadrontherapy beams. *CERN Proceedings*, 1:313-320 (2019)
22. M.P. Carante, G. Aricò, A. Ferrari, W. Kozlowska, A. Mairani and F. Ballarini, First benchmarking of the BIANCA model for cell survival predictions in a clinical hadron therapy scenario, *Physics in Medicine and Biology*, 64:215008, 9 pp (2019)
23. M.P. Carante, G. Aricò, A. Ferrari, C.P. Karger, W. Kozlowska, A. Mairani and F. Ballarini, *In vivo* validation of the BIANCA biophysical model: benchmarking against rat spinal cord RBE data, *Int. J. Mol. Sci.*, *21*, 3973, 11 pp (2020)
24. M.P. Carante and F. Ballarini, Radiation damage in biomolecules and cells, *Int. J. Mol. Sci., 21, 8188 (2020)*
25. F. Barbaro, L. De Dominicis, L. Canton, M.P. Carante, A. Colombi, A. Fontana and A. Stolarz, Theoretical study for a 117mSn production experiment with a 30 MeV α-beam cyclotron, *Nuovo Cimento C*, 43, 136 (2020)
26. A. Colombi, F. Barbaro, L. Canton, M.P. Carante and A. Fontana, Nuclear reaction modeling of 52gMn production for multimodal imaging, *Nuovo Cimento C*, 43, 141 (2020)
27. L. De Dominicis, F. Barbaro, L. Canton, M.P. Carante, A. Colombi, A. Fontana, L. Mou, G. Pupillo, A. Stolarz and P.J. Napiorkowski, Production of 117mSnin NatCd and NatIn targets with an α-beam, *Nuovo Cimento C*, 44, 129 (2021)
28. F. Barbaro, L. Canton, M.P. Carante, A. Colombi, L. De Dominicis, A. Fontana, F. Haddad, L. Mou and G. Pupillo, New results on proton-induced reactions on vanadium for Sc47 production and the impact of level densities on theoretical cross sections, *Phys. Rev. C*, 104, 044619 (2021)
29. A. Embriaco, R. Ramos, M.P. Carante, A. Ferrari, P. Sala, V. Vercesi, F. Ballarini, Heathy tissue damage following cancer ion therapy: a radiobiological database predicting lymphocyte chromosome aberration based on the BIANCA biophysical model, *Int. J. Mol. Sci., 22, 10877 (2021)*
30. M.P. Carante, A. Embriaco, G. Aricò, A. Ferrari, A. Mairani, S. Mein, R. Ramos, P. Sala and F. Ballarini, Biological effectiveness of He-3 and He-4 ion beams for cancer hadrontherapy: a study based on the BIANCA biophysical model, Phys. Med. Biol., 66(19) (2021)
31. A. Colombi, M.P. Carante, F. Barbaro, L. Canton and A. Fontana, Production of high purity ^{52g}Mn from ^{nat}V targets with alpha beams at cyclotrons, *Nuclear Technology*, 208, 735 (2021)
32. R.L. Ramos, A. Embriaco, M.P. Carante, A. Ferrari, P. Sala, V. Vercesi and F. Ballarini, Extension of the BIANCA biophysical model up to Fe-ions and applications for space radiation research, EPJ Web of Conferences, 261, 03001 (2022)
33. F. Ballarini, M.P. Carante, A. Embriaco and R. Ramos, Effects of ionizing radiation in biomolecules, cells and tissue/organs: basic mechanisms and applications for cancer therapy, medical imaging and radiation protection, *AIMS biophysics*, 9, 108 (2022)
34. R.L Ramos, A. Embriaco, M.P. Carante, A. Ferrari, P. Sala, V. Vercesi and F. Ballarini, Radiobiological damage by space radiation: extension of the BIANCA model to heavy ions up to iron, and pilot application to cosmic ray exposure, *J. Radiol. Prot.*, 42(2) (2022)
35. W. Kozlowska, Mario P. Carante, Giulia Aricò, Alfredo Ferrari, Giuseppe Magro, Andrea Mairani, P.

Sala, Dietmar Georg, and Francesca Ballarini, First application of the BIANCA model to carbon-ion patient cases, *Medical Physics,* 67(11), 115013 (2022)

36. F. Barbaro, L. Canton, M.P. Carante, A. Colombi, L. De Nardo, A. Fontana, L. Meléndez-Alafort, The innovative ^{52g}Mn for positron emission tomography (PET) imaging: Production cross section modeling and dosimetric evaluation, *Medical Physics*, 50(3), 1843–1854, (2023)
37. R.L. Ramos, M.P. Carante, A. Ferrari, P. Sala, V. Vercesi and F. Ballarini, A mission to Mars: prediction of GCR doses and comparison with the astronauts' dose limits, *Int. J. Mol. Sci*., 24(3), 2328 (2023)
38. M.P. Carante, R. Ramos and F. Ballarini, Radiation damage in biomolecules and cells 2.0, *Int. J. Mol. Sci*., 24(4), 3238 (2023)
39. M. Ballan et al., Nuclear physics midterm plan at Legnaro National Laboratories (LNL), European Physical Journal Plus, 138(8), 709 (2023), 10.1140/epjp/s13360-023-04249-x
40. R. Ramos, M.P. Carante, E. Bernardini, A. Ferrari, P. Sala, V. Vercesi and F. Ballarini, A method to predict space radiation biological effectiveness for non-cancer effects following intense Solar Particle Events, Life Sciences in Space Research, Under review

Papers not indexed in ISI and/or Scopus

41. F. Ballarini e M.P. Carante, XVI Convegno nazionale della Società Italiana per le Ricerche sulle Radiazioni. *Radiazioni – Ricerca e Applicazioni*, vol. XVII n.3, 1-2 (2014)
42. M.P. Carante, Modellizzazione di morte cellulare e aberrazioni cromosomiche indotte da protoni di diverso LET presso i Laboratori Nazionali del Sud, *Radiazioni - Ricerca e Applicazioni*, vol. XVIII n. 1-2, 4–7 (2015)
43. M.P. Carante, A predictive version of the BIANCA biophysical model to calculate biological effects along hadrontherapy dose profiles, *Radiazioni - Ricerca e Applicazioni*, vol. XX n. 1-2, 34-36 (2017)
44. F Ballarini and MP Carante, BIANCA - Biophysical model/code for cell death and chromosome damage. AIR Newsletter issue 25, March 2018 (http://www.concert-h2020.eu/en/Concert_info/Access_Infrastructures/Bulletins)
45. L. De Dominicis, F. Barbaro, L. Canton, M. P. Carante, A. Colombi, A. Fontana, L. Mou, G. Pupillo, A. Stolarz, Theoretical results of production cross sections of theranostic 117mSn and its contaminants, HIL (Heavy-Ion Laboratory, Warsaw) Annual Report 2019
46. F. Barbaro, L. De Dominicis, L. Canton, M.P. Carante, A. Colombi, A. Fontana, L. Mou, G. Pupillo, A. Stolarz, The Theranostic 117mSn: Theoretical Study for an ENSAR2 Production Experiment with a 30 MeV α-beam at the HIL U-200P Cyclotron in Warsaw. Published in *LNL Annual Report 2019, INFN-LNL Report 259* (2020)
47. A. Colombi, F. Barbaro, L. Canton, M.P. Carante, and A. Fontana, Modeling Nuclear Reactions for PET/MRI MultiModal Imaging: the innovative use of 52gMn. arXiv preprint arXiv:2006.12168, 2020. Published in *LNL Annual Report 2019, INFN-LNL Report 259* (2020)
48. M.P. Carante, F. Barbaro, L. Canton, A. Colombi, and A. Fontana, A Statistical Description of Nuclear Reaction Models for Medical Radionuclides: the Paradigmatic Case of 47Sc Production with Thick Vanadium Targets. arXiv preprint arXiv:2006.07146, 2020. Published in *LNL Annual Report 2019, INFN-LNL Report 259* (2020)

Abstracts

25. N. Protti, F. Ballarini, S. Bortolussi, M.P. Carante, E. Giroletti, I. Postuma, G. Zanoni and S. Altieri, Computational studies to evaluate the feasibility of Neutron Capture Therapy (NCT) to slow down the progression of Alzheimer's Disease (AD), *16th International Congress on Neutron Capture Therapy,* Helsinki, Finland, Book of abstracts, 2014

26. L. Cansolino, A.M. Clerici, C. Zonta, C.M. Bianchi, P. Dionigi, G. Mazzini, R. Di Liberto, S. Altieri, F. Ballarini, S. Bortolussi, M.P.Carante, M. Ferrari, I. Postuma, N. Protti and Ferrari C., Comparative Study of the Radiobiological Effects Induced on Adherent vs Suspended Cells by BNCT, Neutrons and Gamma Rays Treatments, *16th International Congress on Neutron Capture Therapy*, Helsinki, Finland, Book of abstracts, 2014
27. I. Postuma, S. Bortolussi, N. Protti, F. Ballarini, M.P. Carante, M. Ferrari and S. Altieri, Geant4 study of BNCT mixed field energy deposit in an approximated healthy tissue geometry, *6th International Congress on Neutron Capture Therapy*, Helsinki, Finland, Book of abstracts, 2014
28. S. Bortolussi, I. Postuma, N. Protti, F. Ballarini, M. Carante, A. De Bari, P. Bruschi, C. Ferrari, L. Cansolino, C. Zonta, A.M. Clerici, L. Ciani, S. Ristori, L. Panza, S.J. Gonzalez, O. Galasso, G. Gasparini and S. Altieri, Results of pre-clinical studies of BNCT for Osteosarcoma, *6th International Congress on Neutron Capture Therapy*, Helsinki, Finland, Book of abstracts, 2014
29. F. Ballarini, M. Carante, A biophysical model linking DNA damage, chromosome aberrations and cell death, *NanoIBCT workshop MiND-IBCT*, Austria, Book of abstracts, 2014
30. M. Carante and F. Ballarini, Un modello biofisico di morte cellulare basato sulle lesioni a cluster del DNA e le aberrazioni cromosomiche: implicazioni sui meccanismi e applicazioni nell'ambito dell'adroterapia, *Radiazioni Ricerca e Applicazioni*, XVII-3 2014
31. N. Protti, M. Ferrari, F. Ballarini, S. Bortolussi, M.P. Carante, A. De Bari, E. Giroletti, I. Postuma, S. Gallo, M. Marrale, A. Longo, S. Panzeca, G. Iacoviello and S. Altieri, Caratterizzazione dosimetrica della facility a neutroni termici del reattore TRIGA di Pavia: studio della dose da fotoni mediante rivelatori ESR, *Radiazioni Ricerca e Applicazion* , XVII-3 2014
32. L. Cansolino, A.M. Clerici, P. Dionigi, G. Mazzini, R. Di Liberto, S. Altieri, F. Ballarini, S. Bortolussi, M.P. Carante, M. Ferrari, I. Postuma, N. Protti, and Ferrari C., Radiosensitivity differences of adherent vs suspended cell lines exposed to BNCT, Neutrons and Gamma Rays radiations, *Radiazioni Ricerca e Applicazioni,* XVII-3 2014
33. I. Postuma, S. Bortolussi, N. Protti, F. Ballarini, M.P. Carante, M. Ferrari and S. Altieri, Geant4 study of BNCT mixed field energy deposit in an approximated healthy tissue geometry, *Radiazioni Ricerca e Applicazioni*, XVII-3 2014
34. M. Carante and F. Ballarini, A biophysical model of cell death based on DNA cluster lesions and chromosome aberrations, *5th International Congress of Radiation Research*, Kyoto, Japan, 2015
35. Testa A., Patrono C., Monteiro Gil O., Giesen U., Langner F., F. Ballarini, M. P. Carante, Palma V., M. Pinto and Rabus H., Alpha-particles microbeam irradiation: Analysis of radiation-induced chromosome damage on a cell-by-cell basis within the BIOQUART project, *5th International Congress of Radiation Research*, Kyoto, Japan, 2015
36. A. Testa, C. Patrono, O. Monteiro-Gil, U. Giesen, F. Langner, F. Ballarini, M. P. Carante, V. Palma, M. Pinto, H. Rabus, Detection of chromosome aberrations and micronuclei in CHO cells after alpha-particle microbeam irradiation within the BioQuaRT project, *The 12th International Workshop on Microbeam Probes of Cellular Radiation Response*, Tsuruga, Fukui, Japan, 2015
37. F. Ballarini and M. Carante, BIANCA, a model of radiation-induced cell death: biophysical mechanisms and possible applications for hadron therapy, *14th International Conference On Nuclear Reaction Mechanisms*, Varenna (Italy), 2015
38. M.P. Carante and F. Ballarini, Modeling chromosome aberrations and cell death by light ions: biophysical mechanisms and hadrontherapy applications, *61st Annual Meeting of the Radiation Research Society, Weston*, Florida, 2015
39. M.P. Carante and F. Ballarini, Biological effectiveness calculations for an eye melanoma proton beam: a modeling approach, *55th Annual Conference of the Particle Therapy Co-operative Group*, Prague, Czech Republic, 2016
40. M.P. Carante and F. Ballarini, Calculating variations in proton biological effectiveness by the BIANCA biophysical model, *42nd Conference of the European Radiation Research Society*, Amsterdam, The Netherlands, 2016
41. F. Ballarini, M.P. Carante and L. Pederzoli, BIANCA, a biophysical model of radiation-induced cell death and chromosome damage, *42nd Conference of the European Radiation Research Society*, Amsterdam, The Netherlands, 2016

42. F. Ballarini, M.P. Carante and L. Pederzoli, Particelle cariche e morte cellulare: a cosa servono i modelli biofisici?, *XVII Convegno Nazionale SIRR*, Trento, 2016
43. M.P. Carante and F. Ballarini, Effcacia biologica di un fascio terapeutico di protoni: un approccio modellistico, *XVII Convegno Nazionale SIRR*, Trento, 2016
44. L.Bianchini,S.Bortolussi,F.Ballarini, M.P.Carante, S.Fatemi, I.Postuma, L.Cansolino, A.M.Clerici, C.Fer rari, M.Biggiogera, S.Nicolis, M.Campagnoli, M.Galliano, C.Balducci, E.Brandi, L.Colombo,G.Forloni, G.Zanoni, S.Altieri and N.Protti, Pilot studies to evaluate the effectiveness of high LET particle irradiation in damaging neurotoxic protein aggregates. *17th International Congress on Neutron Capture Therapy*, Columbia, Missouri, USA, 2016
45. M.P Carante and F. Ballarini, A predictive version of the BIANCA biophysical model to calculate biological effects along hadrontherapy dose profiles, *2nd Italian Society for Radiation Research (SIRR) day*, Milano, Italy, 2017
46. M.P Carante and F. Ballarini, Full predictions of cell death and chromosome damage along hadrontherapy dose profiles by the BIANCA biophysical model, 43rd Annual Meeting of the European Radiation Research Society (ERRS 2017), Essen, Germany, 2017
47. F. Ballarini, M.P. Carante and J. Tello, The BIANCA biophysical model/MC code: calculations of radiation-induced cell death (and chromosome damage) in view of hadrontherapy treatment, International conference on Monte-Carlo techniques for medical applications, Napoli, Italy, 2017, Published on *Physica Medica* 42, 1-50, 2017
48. G. Battistoni, F. Ballarini, J. Bauer, T. Böhlen, M.P. Carante, F. Cerutti, M. Chin, R. Dos Santos Augusto, A. Fontana, A. Embriaco, A. Ferrari, W. Kozlowska, G. Magro, A. Mairani, K. Parodi, P. Ortega, P. Sala, P. Schoofs, T. Tessonier, V. Vlachoudis, The application of the FLUKA Monte Carlo code in medical physics, International conference on Monte-Carlo techniques for medical applications, Napoli, Italy, 2017, Published on *Physica Medica* 42, 1-50, 2017
49. M.P. Carante, J.J. Tello and F. Ballarini, Predicting biological effects along hadrontherapy dose profiles by the BIANCA biophysical model, 17th International Symposium on Microdosimetry (MICROS 2017), Venezia, Italy, 2017
50. J. Tello, M. Carante, M. Bernal, F. Ballarini, Modeling of chromosome aberration induction by low LET ionizing radiation. *IRPA2018*, Cuba, 2018
51. M.P. Carante, J.J Tello and F. Ballarini, A radiobiological database produced by the BIANCA model to predict the biological effectiveness of hadrontherapy beams, *15th Conference on Nuclear Reaction Mechanisms (NRM)*, Varenna, Italy, 2018
52. G. Arico', F. Ballarini, G. Battistoni, M. Carante, F. Cerutti, R. dos Santos Augusto, A. Ferrari, A. Fontana, F. Horst, W.S. Kozlowska, A. Mairani, I. Mattei, K. Parodi, C. Reidel, P. Sala, C. Schuy, S. Valle, U. Weber, Development of the FLUKA physics models for hadron therapy application, *2018 Nuclear Science Symposium (NSS) and Medical Imaging Conference (MIC)*, Sydney, Australia, 2018
53. F. Ballarini, M.P. Carante, J.J. Tello Cajaio, Ruolo dei “proximity effects” nell’induzione di aberrazioni cromosomiche, *XVIII Convegno nazionale SIRR*, Roma, 2018
54. M.P. Carante, C. Aimè, J.J. Tello Cajaio, F. Ballarini, Un’interfaccia tra FLUKA e il modello biofisico BIANCA per predire l’efficacia biologica di fasci adroterapici, *XVIII Convegno nazionale SIRR*, Roma, 2018
55. G. Arico', F. Ballarini, G. Battistoni, M.P. Carante et al., Improvements of the nuclear reaction modelling and first radiobiological studies in the FLUKA Monte Carlo code for hadron therapy, *International Conference on Nuclear data for Science and Technology*, Beijing, China, 2019
56. M.P. Carante, G. Aricò, A. Ferrari, W. Koslowska, A. Mairani and F. Ballarini, BIANCA: a biophysical model for RBE predictions along hadron therapy beams, *Workshop AIFM “Ricerca e innovazione in fisica medica e biomedica: la Lombardia risponde”*, Milano, 2019
57. A. Fontana, M.P. Carante, L. Canton, Nuclear reactions modeling for theranostics and multi-modal imaging, *Workshop AIFM “Ricerca e innovazione in fisica medica e biomedica: la Lombardia risponde”*, Milano, 2019

58. M.P. Carante, G. Aricò, A. Ferrari, W. Koslowska, A. Mairani and F. Ballarini, The BIANCA model and its applications for RBE predictions along hadrontherapy beams, MCMA 2019 (International Conference on Monte Carlo Techniques for Medical Applications), Montreal, Canada, 2019
59. G. Aricò, F. Ballarini, M. Carante et al., Review of the improved nuclear physics models in FLUKA for helium and carbon ion therapy, *International conference on Medical accelerator and particle therapy*, Sevilla, Spain, 2019
60. A. Fontana, M.P Carante, G. Pupillo, L. Mou, L. Canton, Nuclear reaction calculations applied to cyclotron production of emerging radiopharmaceuticals, *International Symposium on Trends in Radiopharmaceuticals (ISTR-2019)*, Vienna, Austria, 2019
61. L. De Dominicis, F. Barbaro, L. Canton, M.P. Carante, A. Colombi, A. Fontana, L. Mou, G. Pupillo, A. Stolarz, P.J. Napiorkowski, *106th National Congress of the Italian Society of Physics (SIF)*, 14-18 settembre 2020, Book of abstracts, pp 239-240
62. M.P. Carante, G. Arico, A. Embriaco, A. Ferrari, C.P. Karger, W. Kozlowska, A. Mairani, P. Sala and F. Ballarini, RBE prediction by the BIANCA model for *in vitro* and *in vivo* irradiation by different hadron therapy ion-beams, *45th Conference of the European Radiation Research Society (ERRS2020)*, Lund, Sweden, September 2020
63. F. Barbaro, L. De Dominicis, L. Canton, M.P. Carante, A. Colombi, A. Fontana, L. Mou, G. Pupillo, A. Stolarz, Theoretical Study for a 117m Sn Production Experiment with a 30 MeV α-beam, *XIX Convegno Nazionale SIRR*, 10-12 November 2020
64. A. Colombi, F. Barbaro, L. Canton, M.P. Carante and A. Fontana, Nuclear reaction modeling of 52gMn production for MultiModal Imaging, *XIX Convegno Nazionale SIRR*, 10-12 November 2020
65. A. Embriaco, G. Brazzorotto, M. P. Carante, A. Ferrari, A. Mairani, P. Sala and F. Ballarini, Previsione di danni al tessuto sano per fasci adroterapici mediante il modello BIANCA, *XIX Convegno Nazionale SIRR*, 10-12 November 2020
66. M.P. Carante, G. Arico, A. Embriaco, A. Ferrari, C.P. Karger, W. Kozlowska, A. Mairani, P. Sala and F. Ballarini, Previsioni di RBE mediante il modello BIANCA a seguito di irraggiamento *in vitro* e *in vivo* con diversi fasci adroterapici, *XIX Convegno Nazionale SIRR*, 10-12 November 2020
67. M.P. Carante, A. Embriaco, G. Aricò, A. Ferrari, C.P. Karger, W. Kozlowska, A. Mairani, S. Mein, R. Ramos, P. Sala and F. Ballarini, The BIANCA model provides reliable RBE predictions for different cells irradiated by protons, C-ions and He-ions in treatment-like scenarios, 59th Annual Conference of the Particle Therapy Co-operative Group (PTCOG59), 4-7 June 2021
68. M. P. Carante, A. Embriaco, G. Aricò, A. Ferrari, C.P. Karger, W. Kozlowska, A. Mairani, S. Mein, R. Ramos, P. Sala and F. Ballarini, Predictions of the biological effectiveness of He-3 and He-4 beams by the BIANCA biophysical model, *Workshop SIRR on "Nuove Frontiere in Adroterapia: Meccanismi Radiobiologici e Prospettive"*, 10 September 2021
69. F. Barbaro, L. Canton, M.P. Carante, A. Colombi and A. Fontana, Theoretical study of Sc-47 production for theranostic applications using proton beams on enriched titanium targets, *Applied Nuclear Physics Conference*, 12-17 September 2021
70. A. Colombi, F. Barbaro, L. Canton, M.P. Carante and A. Fontana, Improvement of nuclear reaction modeling for the production of Sc-47 on natural vanadium targets for medical applications, *Applied Nuclear Physics Conference*, 12-17 September 2021
71. M.P. Carante, F. Barbaro, L. Canton, A. Colombi, A. Fontana, A new nuclear reaction route to produce Mn-52g with high purity for multi-modal imaging, *Applied Nuclear Physics Conference*, 12-17 September 2021

72. R.L. Ramos, M.P. Carante, E. Embriaco, A. Ferrari, P. Sala, V. Vercesi and F. Ballarini, RBE predictions of cell killing and chromosome aberrations for space radiation exposure, *COSPAR 2022 44th scientific assembly,* Athens, Greece 16-24 July 2022
73. R. Ramos, M.P. Carante, A. Embriaco, A. Ferrari, P. Sala, V. Vercesi and F. Ballarini, Biological damage induced by space radiation: calculation of astronauts' doses and RBE for cell death and chromosome aberrations, *ERRS 2022*, Catania, Italy, September 2022
74. F. Barbaro, L. Canton, M.P. Carante, A. Colombi and A. Fontana, Model study of 49Ti(p,2pn)47Sc and comparison with first production measurement within the LNL-REMIX experiment, *ERRS 2022*, Catania, Italy, September 2022
75. A. Colombi, F. Barbaro, L. Canton, M.P. Carante, and A. Fontana, Comparison of natGd(p,x), 155Gd(p,n) and 159Tb(p,5n) reaction modeling for 155Tb production, *ERRS 2022*, Catania, Italy, September 2022
76. M.P. Carante, W. Kozlowska, A. Embriaco, G. Aricò, A. Ferrari, G. Magro, A. Mairani, R. Ramos, P. Sala, D. Georg and F. Ballarini, A new biophysical model for treatment-plan biological optimization in hadron therapy, *ERRS 2022*, Catania, Italy, September 2022
77. G. Pupillo, L. Mou, L. De Dominicis, F. Barbaro, M. Campostrini, S Cisternino, L. Canton, M.P. Carante, A. Colombi, A. Fontana, F. Haddad, V. Rigato and J. Esposito, Proton-induced reactions for 47Sc production: new nuclear cross section measurements on enriched titanium targets, 11th International Conference on Isotopes, Saskatoon, Saskatchewan, Canada, July 2023

Dichiara altresì di essere informato, ai sensi e per gli effetti di cui all'art. 13 del Decreto Legislativo 96/2003, che i dati personali raccolti saranno trattati, anche con strumenti informatici, esclusivamente nell'ambito del procedimento per il quale la presente dichiarazione viene resa.

Pavia, 19/02/2024