

Curriculum Vitæ

Prof. GIORGIO BAIOTTO

Radiation Biophysics and Radiobiology Laboratory – RadBioPhys Lab – <http://radbiophys.unipv.eu/>

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📅 Date of birth and citizenship: 15/06/1984, Italian

🏠 Milano, ITALIA

Academic positions

February 2023 – present:

Associate Professor (“*Professore Associato*”), Applied Physics, Head of the Radiation Biophysics and Radiobiology Laboratory, Physics Dept., UniPv

February 2020 – January 2023:

Research fellow (“*Ricercatore a tempo determinato Senior – B*”), Radiation Biophysics and Radiobiology Laboratory, Head of the Lab since November 2021 (previously: A. Ottolenghi), Physics Dept., UniPv

January 2016 – January 2020:

Research fellow (“*Ricercatore a tempo determinato Junior – A*”), Radiation Biophysics and Radiobiology Laboratory, Head of the Lab: A. Ottolenghi, Physics Dept., UniPv

January 2013 - December 2015:

Postdoc Fellow (“*Assegnista*”), same Lab, Physics Dept., UniPv

April 2012 - December 2012:

Postdoc Fellow (“*Assegnista*”), Nuclear Physics *group*, Head of the group: M. Bruno, Department of Physics, University of Bologna (UniBo), Bologna, Italy

Degrees

March 2, 2012:

PhD in Physics, Thesis co-direction: UniBo and the University of Caen - Lower Normandy, Caen, France: [“Towards a reconstruction of thermal properties of light nuclei from fusion-evaporation reactions”](#)

October 24, 2008:

M.Sc. *cum laude* in Physics at the University of Bologna, Italy

October 13, 2006:

B.Sc. *cum laude* in Physics at the University of Bologna, Italy

Qualifications

From 12 September 2018 (deadline for application on April 6, 2018):

National Scientific Qualification (ASN) as Associate Professor - “*Abilitazione Scientifica Nazionale - Professore di II fascia*”, SSD FIS/07 - Applied physics – “*Fisica Applicata*”

Scientific production and contribution to workshops/conferences, lectures

The complete list of publications, contributions to Conferences, workshops, lectures and dissemination activities also for the general public is available at: http://fisica.unipv.it/personale/PersFiles/Publ_333.pdf

Overall: **>90 publications since 2011** on peer-reviewed journals in applied physics/radiation biophysics and radiobiology and nuclear physics.

h-index 19, 1382 citations (h-index 17 / 1098 citations in the last 5 years, since 2017), source: Scholar. Several contributions to conferences/workshops/schools as presenter, among which 13 invited/solicited talks/lectures since 2016.

My research activity is mainly focused on the effects of ionizing radiation on biological structures, particularly in the development of theoretical models and simulations, experiment design and data analysis. Applications go from radiation therapy to diagnostics, from radiation protection to risk, especially for the effects of low doses, and also for space radiation.

National and international research projects and personal contributions

(underlined when with coordination / leadership roles)

- IMAGEOMICS** (Horizon Europe, 2024 – ongoing, Local Scientific Responsible for UniPv): leading the WP on Screening for molecular signatures of radiation therapy application and immune system activation in human breast cancer samples;
- TITANS** (Horizon EURATOM, 2022 – ongoing, Local Scientific Responsible for UniPv): leading the Task on Dosimetric assessment for tritiated particle exposure (with dosimetry at organ/tissue/(sub)cellular scale) in the WP *Radiation protection, risk assessment and dosimetry studies following accidental exposure to tritiated dust*;
- PIANOFORTE** (Horizon Europe, 2022 – ongoing, Local Scientific Responsible for UniPv): UniPv is part of the EU partnership on radiation protection research (as ENEA Affiliated Entity), contributing in particular to initiatives for Education & Training and supporting cross-national access to research infrastructures;
- DISCOVER22** (funded by INFN, 2023 – ongoing, Local Scientific Responsible for the INFN Pavia Section): leading the Task on biological modelling, to characterize the immune system activation in cells grown in the LNGS (Laboratori Nazionali del Gran Sasso) underground laboratory (low-level radiation environment), including experimental measurements of cell-cycle in the RadBioPhys Lab;
- VISAIR** (funded by the Italian Space Agency, November 2018 - ongoing, Local Scientific Responsible for UniPv): leading the Task on modeling mechanisms for the activation of astronauts' visual system by ionizing radiation, using track-structure codes and characterizing radical production after passage of ions in the space radiation environment;
- TRANSAT** (H2020, 2017 - 2022, Local Scientific Responsible for UniPv): leading the Task on Tritium Dosimetry (with dosimetry at organ/tissue/(sub)cellular scale) in the WP *Impact of tritiated products on environment and human health*;
- Progetto di Ricerca Corrente 2017** (2017, San Matteo Hospital Foundation - Pavia, Italian Ministry of Health, PI: GR. Corazza), implementation of a vectorial model to define patients' clinical complexity – programming of the data collection tool;
- PERSEO** (funded by the Italian Space Agency, June 2016 – June 2019, Principal Investigator together with A. Ottolenghi): coordination of the project involving industrial partners for the realization of a radiation shielding water-filled spacesuit prototype, successfully tested on board the International Space Station; leading the WP on modeling dose reduction due to shielding in the space radiation environment;
- ANDANTE** (EU-Fp7, concluded in January 2016, coordinated by UniPv): project focus on the cancer risk from neutrons relative to photons using stem cells and the induction of second malignant neoplasms following pediatric radiation therapy. Coordination on behalf of UniPv of the work-package on Physical measurement and modelling of neutron fields; Awards for activities related to this project: Young Investigator Travel Award by the European Radiation Research Society to participate to the ICRR 2015, Kyoto, Japan; best young contributor award by the Italian Radiation Research Society at the 2014 SIRR congress in Pavia;
- SOPRANO** (Eu-Fp7, concluded in June 2016): *Systems Oriented Prediction of Radiation Risk*, bioinformatic data analysis and interpretation for dose- and time- dependent mirnome responses;
- Innovative Radiation Shielding Approaches - Ariadna** (call for ideas funded by the European Space Agency, concluded in July 2015): contractor's Representative for UniPv (for technical matters, together with A. Ottolenghi); coordination of the research activities involving scientists from Thales Alenia Space - Italy; material and design and design study for a wearable radiation protection spacesuit;
- (DoReMi) INITIUM** (Eu-Fp7, concluded, DoReMi internal call 2012): modeling track structures and initial events to assess the issue of radiation quality dependence and to explore different initial radiation targets and **(DoReMi) TREND** (Eu-Fp7, concluded, DoReMi internal call 2014): modeling damage at ions' track ends;
- Projects funded by the Associazione Italiana Sindrome di Shwachman-Diamond (A.I.S.S.)** (2014 - 2015): interpretation and analysis of biological data for the two projects: *Mechanisms underpinning the DNA-damage response in lymphoblastoid cell lines from Shwachman-Diamond patients*; and *Susceptibility to oxidative stress caused by ionizing radiation exposure in Shwachman-Diamond syndrome affected patients' lymphocytes*, UniPv coordination by Dr. J. Morini;
- MERIDIAN** (funded by INFN, 2014, concluded): project focus on the effects of radiation on immunity and differentiation; data analysis and interpretation;
- RADIOSTEM** (funded by INFN, 2013 – 2014, concluded): project focus on mechanisms of the radiobiological response to photons and charged particles of cancer and healthy stem cells;
- NUCL-EX** (funded by INFN): continuing collaboration on modeling nuclear reactions at low and intermediate energy; analysis and interpretation of data for measurement campaigns at e.g. Legnaro National Laboratories (LNL), particularly aiming at investigating the interplay between nuclear structure and

reactions in light nuclei reactions and at benchmarking of radiation transport codes, also adopted in applications to radiation protection. Development of the Monte Code HFI. Past: spokesperson of measurements at LNL – INFN, and first author of a Letter of Intent for the exotic beam facility SPES@LNL.

Education and Training / Teaching Activities (*underlined when with coordination/role of responsibility*)

BioMod^R – PIANOFORTE Training course (University of Pavia, June 2023, funded upon application to the PIANOFORTE Education & Training WP call): Course Director, general topic of the course: experimental models in radiation biophysics and medical physics applications of radiation research;

Scuola Polvani – Monte Carlo 2021 (funded by AIRP – Italian Association for Radiation Protection): member of the Scientific Committee and lecturer, general topic of the lectures: transport and track structure codes;

1st and 2nd TRITIUM SCHOOL (TRANSAT) and TRITIUM SSCHOOL (TITANS) (2019 – Ljubljana, Slovenia; 2021 *online*; 2024, Marseille, France) – invited lecturer on tritium dosimetry at the subcellular scale;

2019 USTC Training course: Space Radiation Effects and Radiation Modeling Approaches (University of Science and Technology China, Hefei-Anhui) – invited lecturer for the topics: *Radiation-matter Interaction: an overview; Biological effects of space radiation and countermeasures*;

CONCERT (H2020): activities in E&T, co-director of the Concert Training Course (funded upon successful application): *Modeling radiation effects from initial physical events* (Pavia, together with A. Ottolenghi, for the 2019, 2018 and 2017 Editions); Lecturer in all course editions since 2016, topics of the lectures: *Interaction Radiation Matter; Nuclear Interactions; Transport Codes; Modeling DNA Damage; Cell Cycle models; Space Radiation*; integrated in the course: *Ionizing Radiation and Biological Structures: Theory and Applications*, for the PhD school in physics, UniPv and *Radiobiologia* (“*Radiobiologia*”) for the MSc. courses in physics and biology;

EUTEMPE-RX (Eu-Fp7, concluded): coordination activities for the course: *Radiation Biology for Medical Physicists*, Pavia, April 2015, in particular for the sessions: *Interventional Radiology and Radiobiology; Diagnostics and Radiobiology - Discussion of clinical situations / cases presented by radiologists and medical physicists*;

DoReMi (Eu-Fp7, concluded): Lecturer at the DoReMi Training Course: *Modeling radiation effects from initial physical events*, Pavia, Editions 2013, 2014, 2015.

Lecturer at University of Pavia (“docente titolare”)

Fisica Medica (Medical Physics) (5ECTS, 40hours) for *Medicina e Chirurgia* (2021/2022 – present);

Radiation Biophysics and Radiobiology (6ECTS, 48hours) for M.Sc. in Physics, Biology, Biotechnology (2022-2023 – present, 2019/2020 – 2021/2022 taught in Italian - **Radiobiologia**);

Fisica Applicata (Applied Physics) (6ECTS, 48hours) for *Odontoiatria e Protesi Dentaria* (Dentistry and Dental Prosthetics) (2018/2019 – present);

Traineeship in Radiology (former **Instrumental Semeiotics**)(1ECTS, 8hours), module in *Clinical Foundations*, for *Medicine & Surgery* (2015 - present);

Fisica Applicata (Applied Physics) (1ECTS, 6hours) for *Scuola di specializzazione in Radiodiagnostica* (2018/2019 – present);

Radiobiologia (Radiobiology) (4hours) for *Master in Radiation protection* (2024);

Semeiotica strumentale (1ECTS, 8hours), module in *Semeiotica medica e chirurgica*, for *Medicina e Chirurgia* (2015 - 2021);

Tecniche Diagnostiche (Diagnostic Techniques) (3ECTS, 24hours) for the M.Sc. in Physics (2014/2015).

Lecturer at University of Milano

Radiobiologia (Radiobiology) (8hours of lectures + 15hours of lectures with practical content) for *Scuola di specializzazione in Fisica Medica* (2022/2023);

Supervision/co-supervision of several PhD, MSc and BSc theses in physics, biology, biotechnology

Society/platform memberships with active role

COSPAR (Committee on Space Research) elected vice-chair of Commission F: *Life Sciences as related to Space* since July 2022; Deputy Scientific organizer for Sub-commission F2.2.: *Space Radiation Risk and Countermeasures: Physical and Biophysical Mechanisms, Modelling and Simulations* since 2021;

MELODI - Multidisciplinary European Low Dose Initiative representative for UniPv since 2021; first member and co-chair (since 2023) of the Strategic Research Agenda WG

EURADOS - European Radiation Dosimetry Group associate membership; deputy for the Task

Computational Micro- and Nanodosimetry in Working Group 6: *Computational dosimetry*.

Awards

COSPAR 2021 Zeldovich Medal given to young scientists who have demonstrated excellence and achievement in their research, conferred by COSPAR (Committee on Space Research) and the Russian Academy of Sciences

MELODI Award 2019 awarded from MELODI – Multidisciplinary European LOW Dose Initiative to a young researcher active in the domain of low-dose radiation research, including invitation to present the work during the *European Radiation Protection Week 2019*, Stockholm, Sweden, October 2019

plus previous **Young Investigator and Travel Awards** (European Radiation Research Society in 2015, Italian Radiation Research Society in 2014)

Visiting periods abroad

Helmholtz Zentrum, München, Germany, 25 – 29 Nov 2019; 24 - 28 Aug 2015, collaboration with W. Friedland, track structure calculations with PARTRAC;

Chalmers University of Technology, Göteborg, Sweden, 25 Feb - 9 Mar 2013, collaboration with L. Sihver, transport calculations with PHITS (ANDANTE, with ANDANTE Exchange Program award)

Horia Hulubei National Institute of Physics and Nuclear Engineering - IFIN HH Bucharest, Romania, 21 - 31 Aug 2011, collaboration with Dr. A. Raduta, simulation of nuclear reactions

Laboratoire de Physique Corpusculaire - LPC Caen, Caen, France, Sep 2012 - Dec 2012 Visiting Research Fellow (*“Assegnista di ricerca”*) in the group *Physique Théorique et Phénoménologie* and Dec 2009 - Jul 2010, Mar 2011 - Jul 2011, *PhD thesis in co-direction with the University of Caen - Lower Normandy*, supervision of Prof. F. Gulminelli

Freie Universität Berlin, Berlin, Germany *ERASMUS Project*, AY 2006/07 - Oct 2006 - Jul 2007

Personal and Technical Skills

Written and oral proficiency in English (also, certificate of attendance of an English-Italian translator course, Herzog Literary Agency, Milan, 2014), French and German.

Programming skills in C/C++, software for data (e.g. ROOT, gnuplot) and image analysis (e.g. Image J), familiar with Windows, Mac OSs and Linux OSs. Website manager: <http://radbiophys.unipv.eu/>

Activity as reviewer for scientific journals

Among others: *Scientific Reports*; *Radiation Research*; *Radiation and Environmental Biophysics*; *The British Journal of Radiology*; *Radiation Protection Dosimetry*; *Life Sciences in Space Research*.