Short Curriculum Vitæ of Dr. GIORGIO BAIOCCO

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Academic positions:

January 2016 - present: Research fellow ("*Ricercatore a tempo determinato*") in the ***Radiobiology and Radiation Biophysics group***, Head of the group: A. Ottolenghi, Department of Physics, University of Pavia (UniPv), Pavia, Italy
January 2013 - December 2015: Postdoc Fellow ("*Assegnista*") in the same group at UniPv.
March 2012 - December 2012: Postdoc Fellow ("*Assegnista*"), Head of the group: M. Bruno, Department of Physics, University of Bologna (UniBo), Bologna, Italy

Education:

January 2010 - December 2012: PhD at UniBo, Italy and University of Caen Lower Normandy, Caen, France
October 2008: M.Sc. *cum laude* and October 2006 B.Sc. *cum laude* in Physics at the University of Bologna

The current research is focused on the interaction of radiation with matter / biological targets, particularly in the development of models and simulations, experiment designs and data analysis. Applications go from radiation therapy to diagnostics and radiation protection, especially for the effects of low doses and for space radiation. This includes Monte Carlo calculations of the interaction of charged and non-charged species (photons and neutrons) with tissues, both at the macroscopic level (*e.g.* with PHITS) and at the microscopic sub-cellular level with biophysical track structure codes (PARTRAC, in direct collaboration with the main code developer W.Friedland), up to the evaluation of radiation-induced DNA damage.

These approaches have been used within the EU-Fp7 project ANDANTE, coordinated by UniPv on the cancer risk from neutrons relative to photons using stem cells and the induction of second malignant neoplasms following pediatric radiation therapy. My contribution to the project was also on the experimental side (conception, design and characterization of adopted set-ups, active participation to neutron irradiations as *e.g.* at the PTB Braunschweig, set-up assembly, dosimetry). For the presentation of results obtained in the framework of ANDANTE I was awarded with a best young contributor award by the Italian Radiation Research Society at the 2014 SIRR congress in Pavia, and with a Young Investigator Travel Award by the European Radiation Research Society to participate to the ICRR 2015, Kyoto, Japan.

First within the ESA (*European Space Agency*) - ARIADNA Call for Ideas program (as contact person for UniPv with A. Ottolenghi) and now within a contract with the Italian Space Agency ASI (as co-Principal Investigator, PI: A. Ottolenghi) I coordinate UniPv research activities for the PERSEO - *PErsonal Radiation Shielding for intErplanetary missiOns* - project, whose aim was to deliver a feasibility study (ESA phase) for an innovative wearable radiation protection system to mitigate the effects of cosmic radiation on astronauts in space exploration missions and is now (ASI phase) to build a prototype of the space suit to be tested on the ISS - *International Space Station* - for comfort and wearability.

Within the activities of the *Radiobiology and Radiation Biophysics* group in Pavia I'm involved *e.g.*: in the theoretical aspects of the investigation of the perturbation of cellular signaling (*e.g.* inflammatory response) modulated by low up to moderate doses of ionizing radiation of different qualities, contributing mainly to statistical analysis of biological data and image analysis (*e.g.* with the Image J software); in the theoretical investigation of radiation quality dependence of initial damage (*e.g.* using DNA damage as a tool, see e.g. INFN funded project RADIOSTEM and EU projects DoReMi - INITIUM and TREND).

Previously, starting from the MSc, later with the PhD and the first postdoc contract, my research activity was mainly focused on fundamental nuclear physics, especially on nuclear reactions at low and intermediate energy, both at the experimental level (data analysis and measurements performed in several laboratories - LNL INFN, LNS INFN in Italy, GANIL, France) and on the modeling side (I'm the author of the statistical model Monte Carlo code *HFI*). Thanks to an ongoing collaboration with the research group in Bologna, I'm still contributing to the interpretation and modeling of experimental data, particularly aiming at investigating nuclear clustering phenomena.

Teaching activity: 1 ECTS modules: *Semeiotica strumentale* for Medicina e Chirurgia and *Instrumental Semeiotics* for Medecine & Surgery (UniPv, AA. 2015/2016); 3 ECTS module: *Diagnostic Techniques* for the M.Sc. in Physics (UniPv, AA. 2014/2015). Lecturer in the 2013/14/15/16 editions of the former DOREMI and now CONCERT Training Course: *Modeling radiation effects from initial physical events*, Pavia. Co-scientific Director for the 2017 edition of the same course, approved by CONCERT, to be held in Pavia. Coordination activity for the EU-Fp7 EUTEMPE-RX course: *Radiation Biology for Medical Physicists*, Pavia, April 2015. Supervisor of BSc (S. Barbieri, M. El Ais) and MSc (M. Siragusa) theses in Physics at UniPv.

Personal and Technical Skills: written and oral proficiency in English (certificate of attendance of an English-Italian translator course, Herzog Literary Agency, Milan, 2014), French and German. Programming skills in C/C++, computing skills in software for data (e.g. ROOT, gnuplot) and image analysis (*e.g.* Image J), familiar with Windows, Mac OSs and Linux OSs.

last update - June 2016