

Marica Baldoncini

Dipartimento di Fisica e Scienze della Terra – Università di Ferrara
Via Saragat 1 – 44122 – Ferrara
baldoncini@fe.infn.it
+39 338 5876601



EDUCATION

January 2017 to present

Post-doc position - University of Ferrara

January 2014 to December 2016

Graduate student in Physics - University of Ferrara

Title of the thesis: : *New challenges in the spectral reconstruction of terrestrial gamma-rays and reactor antineutrinos*

Final mark: Excellent

September 2010 – October 2013

Master Degree in Physics – University of Ferrara

Activities: Nuclear and Subnuclear Physics, Particle Physics

Title of the thesis: : *Validation of a Monte Carlo method for the calibration of an airborne gamma-ray detector*

Final mark: 110/110 cum laude

September 2006 – March 2010

Bachelor Degree in Physics – University of Ferrara

Activities: General Physics, Astrophysics, Nuclear Physics, Programming

Title of the thesis: *Applicazione del metodo Non Negative Least Square alla Full Spectrum Analysis nel processo di calibrazione di uno spettrometro di raggi gamma portatile*

Final mark: 110/110 cum laude

September 2002 – June 2010

Diploma in Clarinet – Conservatory G.Frescobaldi of Ferrara

Final mark: 9/10

September 2001 – June 2006

Maturità Scientifica – Liceo Scientifico P.N.I “T.C.Onesti”, Fermo

Final mark: 100/100

AWARDS

2016

Scholarship “Mobilità lunga per dottorandi” from the University of Ferrara

Scholarship “Borsa di studio per soggiorni all’estero di dottorandi” from the Istituto Universitario di Studi Superiori IUSS-Ferrara 1391

Barcelona Supercomputing Center, Barcelona, Spain (August)

Activities: "*Optimization of codes used for analyses of data gathered from several heterogeneous devices and sensors during airborne campaigns. Basic principles and methods behind parallel and big-data computing*".

2014

Ferrara School of Physics - University of Ferrara

Award for best Master thesis, reporting excellent scientific results for the international community.

2011

Exchange Program DOE/INFN

SLAC National Accelerator Laboratory, Menlo Park, California (July - September)

Activities: "Implementation of analysis tools for the treatment of Fermi satellite data in a virtual machine and uploading of the virtual machine in a cloud service".

PEER REVIEWED SCIENTIFIC PAPERS

Albèri, M., Baldoncini, M., Bottardi, C., Chiarelli, E., Fiorentini, G., Raptis, K. G. C., Realini, E., Reguzzoni, M., Rossi, L., Sampietro, D., Strati, V. and Mantovani, F. *Accuracy of flight altitude measured with cheap GNSS, radar and barometer sensors: implications on airborne radiometric surveys*. **Submitted to Sensors** (IF: 2.964)

Baldoncini, M., Albèri, M., Bottardi, C., Raptis, K. G. C., Minty, B., Strati, V. and Mantovani, F. *Exploring atmospheric radon with airborne gamma-ray spectroscopy*. **Submitted to Atmospheric Environment** (IF: 3.948)

Baldoncini, M., Albèri, M., Bottardi, C., Raptis, K. G. C., Minty, B., Strati, V. and Mantovani, F. *Airborne gamma-ray spectroscopy for modeling cosmic radiation and effective dose in the lower atmosphere*. **Submitted to IEEE Transactions on Geoscience and Remote Sensing**. (IF: 4.942)

Strati, V., Wipperfurth, S. A., Baldoncini, M., McDonough, W. F. and Mantovani, F. *Perceiving the crust in 3D: a model integrating geological, geochemical, and geophysical data*. **Submitted to Geochemistry, Geophysics, Geosystems** (IF: 3.201)

Grassi, M., Montuschi, M., Baldoncini, M., Mantovani, F. and Ricci, B. *Charge Reconstruction in Large-Area Photomultipliers*. **Submitted to Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment**. (IF: 1.211)

Kaçeli Xhixha, M., Albèri, M., Baldoncini, M., Bezzon, G.P., Buso, G.P., Callegari, I., Casini, L., Cuccuru, S., Fiorentini, G., Guastaldi, E., Mantovani, F., Mou, L., Oggiano, G., Puccini, A., Rossi Alvarez, C., Strati, V., Xhixha, G., Zanon, A.. *Map of the uranium distribution in the Variscan Basement of Northeastern Sardinia*. **Journal of Maps** (2015). DOI:10.1080/17445647.2015.1115784 (IF: 1.435)

Xhixha, G., Alberi, M., Baldoncini, M., Bode, K., Bylyku, E., Cfarku, F., Callegari, I., Hasani, F., Landsberger, S., Mantovani, F., Rodriguez, E., Shala, F., Strati, V., Kaçeli Xhixha, M. *Calibration of HPGe detectors using certified reference materials of natural origin*. **Journal of Radioanalytical and Nuclear Chemistry** (2015). DOI: 10.1007/s10967-015-4360-6 (IF: 0.983)

Strati, V., Baldoncini, M., Callegari, I., Mantovani, F., McDonough, W., Ricci, B., and Xhixha, G. *Expected geoneutrino signal at JUNO*. **Progress in Earth and Planetary Science** 2, 1-7, (2015). DOI: 10.1186/s40645-015-0037-6

Xhixha, G., Baldoncini, M., Callegari, I., Colonna, T., Hasani, F., Mantovani, F., Shala, F., Strati, V., and Xhixha Kaceli, M. *A century of oil and gas exploration in Albania: Assessment of Naturally Occurring Radioactive Materials (NORMs)*. **Chemosphere** 139, 30-39, (2015). doi: 10.1016/j.chemosphere.2015.05.018 (IF:3698)

Baldoncini, M., Callegari, I., Fiorentini, G., Mantovani, F., Ricci, B., Strati, V. and Xhixha, G. *Reference worldwide model for antineutrinos from reactors*. **Physical Review D** 91, 065002 (2015). DOI: 10.1103/PhysRevD.91.065002 (IF: 4.506)

Strati, V., Baldoncini, M., Bezzon, G. P., Broggin, C., Buso, G. P., Cacioli, A., Callegari, I., Carmignani, L., Colonna, T., Fiorentini, G., Guastaldi, E., Kaçeli Xhixha, M., Mantovani, F., Menegazzo, R., Mou, L., Rossi Alvarez, C., Xhixha, G., and Zanon, A. *Total natural radioactivity, Veneto (Italy)*. **Journal of Maps**, 1-7 (2014). DOI: <http://dx.doi.org/10.1080/17445647.2014.923348> (IF: 1.435)

Guastaldi, E., Baldoncini, M., Bezzon, G., Broggin, C., Buso, G., Cacioli, A., Carmignani, L., Callegari, I., Colonna T., Dule, K., Fiorentini, G., Kaçeli Xhixha, M., Mantovani, F., Massa, G., Menegazzo, R., Mou, L., Rossi Alvarez, C., Strati, V.,

Xhixha, G., Zanon, A., *A multivariate spatial interpolation of airborne γ -ray data using the geological constraints*. **Remote Sensing of Environment**, 137 (2013) 1-11. ISSN: 0034-4257. DOI: 10.1016/j.rse.2013.05.027 (IF: 5.881)

Cacioli, A., Baldoncini, M., Bezzon, G.P., Broggin, C., Buso, G.P., Callegari, I., Colonna, T., Fiorentini, G., Guastaldi, E., Mantovani, F., G. Massa, R. Menegazzo, L. Mou, C.R. Alvarez, M. Shyti, A. Zanon, G. Xhixha, *A new FSA approach for in situ γ ray spectroscopy*. **Science of The Total Environment**, 414 (2012) 639-645. ISSN: 0048-9697. DOI: 10.1016/j.scitotenv.2011.10.071. (IF: 3.976)

CONFERENCE PROCEEDINGS AND PAPERS NOT PEER REVIEWED

Albéri M., Baldoncini M., Callegari I., Mantovani F., Raptis K.G.C., Realini E., Reguzzoni M., Rossi L., Sampietro D., Strati V. *Studio della quota di volo mediante GNSS, altimetro radar e barometro per rilievi di spettroscopia gamma da velivolo*. **Atti 20a Conferenza Nazionale A.S.I.T.A.**, Cagliari, 8-10 novembre 2016, ISBN 978-88-941232-6-5; pp:661-669. (2016)

Baldoncini, M., V. Strati, S. A. Wipperfurth, G. Fiorentini, F. Mantovani, W. F. McDonough, and B. Ricci. *Geoneutrinos and Reactor Antineutrinos at SNO+*. **Journal of Physics: Conference Series 718**, no. 6 (2016): 062003. doi:10.1088/1742-6596/718/6/062003.

Bowden, N. S., K. M. Heeger, P. Huber, C. Mariani, and R. B. Vogelaar. *Applied Antineutrino Physics 2015 - Conference Summary*. **arXiv:1602.04759** [hep-ex, Physics:hep-ph, Physics:nucl-ex, Physics:physics]. <http://arxiv.org/abs/1602.04759>. (2016).

Adam, T., F. An, G. An, Q. An, N. Anfimov, V. Antonelli, G. Baccolo, et al. *JUNO Conceptual Design Report*. **arXiv:1508.07166** [hep-ex, Physics:physics]. <http://arxiv.org/abs/1508.07166>. (2015).

Xhixha M., Baldoncini M., Bezzon G.P., Buso G.P., Carmignani L., Casini L., Callegari I., Colonna T., Cuccuru S., Guastaldi E., Fiorentini G., Mantovani F., Massa G., Mou L., Oggiano G., Puccini A., Rossi Alvarez C., Strati V., Xhixha G., Zanon A., *A Detailed Gamma-ray Survey for Estimating the Radiogenic Power of Sardinian Variscan Crust*. 27th **Conference of the Nuclear Societies in Israel; Dead Sea (Israel)**; 11-13 Feb 2014; INIS Issue 50. Vol. 45 (2014).
Tufarolo E., Baldoncini M., Bezzon G., Brogna F.N.A., Buso G., Callegari I., Carmignani L., Colonna T., Fiorentini G., Guastaldi E., Kaçeli Xhixha M., Mantovani F., Mou L., Pagotto C., Realini E., Reguzzoni M., Rossi C.A., Salvini R., Sampietro D., Strati V., Xhixha G., Zanon A., *Il Radgyro: un autogiro dedicato ad acquisizioni airborne multiparametriche*. **Atti 18a Conferenza Nazionale A.S.I.T.A.**, Firenze, 14-16 novembre 2014, ISBN:978-88-903132-9-5; pp: 1159-1165 (2014).

Strati V., Baldoncini M., Bezzon G.P., Broggin C., Buso G.P., Cacioli A., Callegari I., Carmignani L., Colonna T., Fiorentini G., Guastaldi E., Kaçeli Xhixha M., Mantovani F., Menegazzo R., Mou L., Rossi Alvarez C., Xhixha G., Zanon A., *Total natural radioactivity map of Veneto (Italy)*. **INFN-LNL Rep. 240**, 145-146. ISSN: 1828-8561 (2014).

Garosi P., Baldoncini M., Iovene A., Mantovani F., Mou L., Petrucci S., Rossi Alvarez C., Strati V., Tintori C., Xhixha G.. *A segmented detector for airborne gamma-ray spectroscopy*. **Symposium on Radiation Measurements and Applications (SORMA XV)**, Michigan, USA. (2014).

Xhixha G., Baldoncini M., Bezzon G.P., Buso G.P., Callegari I., Colonna T., Fiorentini G., Gjeta G., Goga M., Guastaldi E., Hasani F., Mantovani F., Mou L., Rossi Alvarez C., Strati V., Xhixha Kaçeli M., Zanon A., *Assessment of Naturally Occurring Radioactive Materials (NORMs) in soils from the Kuçova oilfield, Albania*. **7th International Conference on Environmental And Geological Science And Engineering (EG 2014)**, Salerno, Italy. Latest Trends in Energy, Environment and Development, 154-160. ISBN: 978-960-474-375-9 (2014).

Strati V, Baldoncini M. , Bezzon G.P. , Broggin C., Buso G.P., Cacioli A., Callegari I., Colonna T., Fiorentini G., Guastaldi E., Kaceli Xhixha M., Mantovani F., Massa G., Menegazzo R., Mou L., Rossi Alvarez C., Xhixha G., *Studio preliminare del contenuto di radioattività delle principali formazioni rocciose delle aree alpine, prealpine e collinari della Regione Veneto*. **Mus. Civ. Rovereto, Atti del Workshop in geofisica**. ISBN 978-88-7498-200-4 (2013).

Guastaldi E., Baldoncini M., Bezzon G., Brogгинi C., Buso G.P., Caciolli A., Callegari I., Colonna T., Fiorentini G., Kaçeli Xhixha M., Mantovani F., Massa G., Menegazzo R., Mou L., Rossi Alvarez C., Strati V., Xhixha G., *Mapping the natural radioactivity of Elba Island by means of geostatistical interpolation of airborne gamma-ray data*. **Mineralogical Magazine**, 77(5) 1224 (2013). DOI:10.1180/minmag.2013.077.5.24

Ricci B., Mantovani F., Baldoncini M., Esposito J., Ludhova L., Zavatarelli S., *Reactor Antineutrinos Signal all over the world*. Proceedings of XV International Workshop on Neutrino Telescopes, **PoS(Neutel 2013)077**, March 11-15 2013, Venice, Italy, ISSN 1824-8039, arXiv:1403.4072

Mou L., Baldoncini M., Bezzon G.P., Brogгинi C., Buso G.P., Caciolli A., Callegari I., Colonna T., Fiorentini G., Guastaldi E., Mantovani F., Massa G., Menegazzo R., Rossi Alvarez C., Shyti M., Xhixha G., Xhixha M., *Nuovo spettrometro gamma per il monitoraggio della radioattività in situ*. **Mus. Civ. Rovereto, Atti del Workshop in geofisica**. ISBN 978-88-7498-160-1, (2011)

INVITED SPEAKER AT CONFERENCES

24 – 28 July 2017

Topics in Astroparticle and Underground Physics (TAUP) 2017 – Sudbury (Canada)

Title of the talk: “**Crustal geoneutrino signal expected at the Sudbury Neutrino Observatory**”

8 – 9 June 2016

Workshop on Aero Gamma Spectrometry – Bad Schlemma (Germany)

Title of the talk: “**Monte Carlo simulation and new challenges for airborne gamma-ray spectroscopy**”

7 – 8 December 2015

Applied Antineutrino Physics 2015 – Virginia Tech Research Center in Arlington (USA)

Title of the talk: “**Global Antineutrino Map**”

7 – 11 September 2015

Topics in Astroparticle and Underground Physics (TAUP) 2015 – Torino

Title of the talk: “**Reactor antineutrinos background in present and future geoneutrinos detectors**”

15 – 17 June 2015

Neutrino Geoscience 2015 Conference – Parigi

Title of the talk: “**World-map of reactor neutrino flux**”

POSTER PRESENTATIONS

Baldoncini M., Callegari I., Fiorentini G., Mantovani F., Ricci B., Strati V., Xhixha G., *Reference worldwide model for antineutrinos from reactors*. **Summer Insitute: “Using Particle Physics to Understand and Image the Earth”**. 11 July – 21 July 2016, Gran Sasso Science Institute, L’Aquila, Italy (2016).

Baldoncini M., Callegari I., Fiorentini G., Mantovani F., Ricci B., Strati V., Xhixha G., *Detecting geoneutrinos and reactor antineutrinos in the world*. **XVI International Workshop on Neutrino Telescopes**. 2 March – 6 March 2015, Venice, Italy (2015).

Baldoncini M., Esposito J., Ludhova L., Mantovani F., Ricci B., Strati V., Xhixha G., Zavatarelli S., *A worldwide map of reactor antineutrino signals*. **XXVI International Conference on Neutrino Physics and Astrophysics (Neutrino 2014)** 2 June – 7 June 2014, Boston, USA (2014).

Baldoncini M., Esposito J., Ludhova L., Mantovani F., Ricci B., Xhixha G., Zavatarelli S., *Geo-neutrinos and reactor anti-neutrinos expected in Daya Bay II and in LENA*. **Japan Geoscience Union Meeting (JpGU 2014)** 28 April – 2

May 2014, Pacifico Yokohama, Kanagawa, Japan (2014).

OTHER EDUCATIONAL EXPERIENCES

2012

21 May 2012- 26 May 2012 - *IUSS Ferrara*

Participation to the Ferrara International School Nicolò Cabeo "Hadronic Spectroscopy"

2011

25 July 2011- 5 August 2011- *SLAC National Accelerator Laboratory*

Participation to the XXXIX SLAC Summer Institute: "History of the Universe"

11 April 2011- 15 April 2011 – *Laboratori INFN di Legnaro*

Participation to the IV National School "Devices and Electronics for High Energy Physics, Astrophysics, Spatial Applications and Medical Physics"

TEACHING

2017

Teaching assistant for the Summer School in Nuclear Physics and Technologies (Dipartimento di Fisica e Scienze della Terra – Università di Ferrara).

2016

Teaching assistant for the Fisica II course (Corso di Laurea Triennale in Scienze Geologiche – Università di Ferrara).

Teacher for the didactic project "A scuola con la radioattività" (Progetto "Attivamente" - Fondazione Cassa di Risparmio di Padova e Rovigo).

2015

Teaching assistant for the Fisica II course (Corso di Laurea Triennale in Scienze Geologiche – Università di Ferrara).

Teacher for the didactic project "A scuola con la radioattività" (Progetto "Attivamente" - Fondazione Cassa di Risparmio di Padova e Rovigo).

2014

Teaching assistant for the Fisica II course (Corso di Laurea Triennale in Scienze Geologiche – Università di Ferrara).

Teacher for the didactic project "A scuola con la radioattività" (Progetto "Attivamente" - Fondazione Cassa di Risparmio di Padova e Rovigo).

Teacher for the Stage of the Liceo Aristo di Ferrara at Dipartimento di Fisica e Scienze della Terra - Università di Ferrara.

Teacher for the Stage at Laboratori Nazionali di Legnaro (LNL).

BACHELOR THESIS CO-SUPERVISOR

A.A. 2013 – 2014 – Corso di Laurea in Fisica – Università di Ferrara

Title: *Modelli di distribuzione di Radon in atmosfera finalizzati alla correzione di misure di spettroscopia gamma airborne*

Student: Nicola Ronca

Supervisor: Fabio Mantovani

Co-supervisor: Marica Baldoncini

PERSONAL SKILLS AND COMPETENCES

Mother language: Italian

Foreign language: English. First Certificate of English (University of Cambridge) – Level C1

COMPREHENSION		SPOKEN		WRITTEN
Listening	Reading	Interaction	Oral production	
C1	C1	C1	C1	C1

Programming skills

Good knowledge of C, C++, Fortran, Root, LaTeX.

Basic knowledge of Geant4, MATLAB, html.

Social skills

I have a strong attitude towards collaboration in multidisciplinary research teams and I am involved in national and international scientific collaborations. I personally believe that working with people with different scientific backgrounds is one of the key factor for reaching excellent scientific results.

Communication skills

The presentation of oral contributions to international conferences and the teaching activities allowed me to gather good and flexible communication skills with respect to different audiences.