PERSONAL INFORMATION

Luca Rebuffi

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Sex Male | Date of birth 21/07/1973 | Nationality Italian

OCCUPATIONAL FIELD

X-Ray Optics / Scientific Software / CAE

WORK EXPERIENCE

2018 – Today

Physicist at X-ray Optics Group

Advanced Photon Source at Argonne National Laboratory, 9700 S. Cass Avenue, Lemont IL 60439, USA (www.aps.anl.gov)

- Design of optical layouts for synchrotron radiation beamlines (ray-tracing and wavefront simulations aided design, thermal load analysis).
- Development of software for optical simulations and beamline instrumental performance analysis (http://www.elettra.eu/oasys.html).

Business or sector Scientific Research, Scientific Instrumentation

2010 – 2018

Researcher in X-ray Optics

Elettra-Sincrotrone Trieste S.C.p.A., Strada Statale 14 - km 163,5 in AREA Science Park 34149 Basovizza (TS), Italy (www.elettra.eu)

- Design of optical layouts for synchrotron radiation beamlines (ray-tracing and wavefront simulations aided design, thermal load analysis).
- Supervision of X-ray Optics Laboratory (single crystal diffraction, powder diffraction and X-ray fluorescence).
- Development of software for optical simulations and beamline instrumental performance analysis (http://www.elettra.eu/oasys.html).
- Development of software to control laboratory devices and measurements.

Business or sector Scientific Research, Scientific Instrumentation

2007 – 2009

CAE (Computer-aided Engineering) Engineer

Automotive Lighting Rear Lamps Italia S.p.A., Via dell'Industria, 17, Tolmezzo (UD), Italy (www.al-lighting.com)

- Feasibility studies from a thermal point of view (analysis of stability, mechanical design solutions, choice of materials) of automotive lighting devices (rear lamps).
- Thermal and structural simulations using CFD (Computational Fluid Dynamics) and FEA (Finite Elements Analysis).
- Prototyping and thermal testing in laboratory.
- Mechanical design with 3D-CAD (Computer-aided Design).

Business or sector Automotive Industry

2005 – 2007 **Independent Consultant - Software Architect**

- Design and development of J2EE (Java 2 Enterprise Edition) and .NET information systems.
- Teaching professional courses of software programming (Java Programming as a Cisco Certified Academy Instructor).

Business or sector Information Technology

2004 – 2005 **Owner and Administrator of a Private Company**

Larus Business Automation s.r.l. , Viale Garibaldi, 132/A Mestre (VE), Italy (www.larus-ba.it)

- Design and development of J2EE information systems.
- Teaching professional courses of software programming.
- Management of Network and Security services.

Business or sector Information Technology

2000 – 2004 **Project Leader**

O.A.T. Informatica s.r.l., Via Torino, Mestre (VE), Italy

- Design and development of J2EE information systems.
- Teaching professional courses of software programming.
- Internal staff training.

Business or sector Information Technology

1999 – 2000 **National Community Service Operator**

Istituto Costante Gris, Via Torni, 51 Mogliano Veneto (TV), Italy (www.istitutogris.it)

- Care and assistance of psychiatric disabled people.

Business or sector Social Service

1998 – 1999 **Software Analyst and Developer**

Progetto EDP s.r.l., Via Roma, 145/A Carità di Villorba (TV), Italy (www.progettoedp.it)

- Design and development of EDP (Electronic Data Processing) systems on AS/400 platform.

Business or sector Information Technology

EDUCATION AND TRAINING

2012 – 2015 **Ph.D. in Materials Science and Engineering** ISCED6

Università degli studi di Trento (Italy)

- Thesis title: "*Advanced Characterization of Nanocrystalline Materials by Synchrotron Radiation X-Ray Diffraction*".
- Tutor: Prof. Paolo Scardi (paolo.scardi@unitn.it)

1999 – 2000 **Master in Software Engineering**

Software Engineering Research Center at Purdue University (USA), Università degli studi di Padova (Italy)

- Object-oriented analysis and test.
- Design and development of J2EE 1.2 information systems.

1992 – 1998 **M.S. Degree in Physics** ISCED5

Università degli studi di Padova (Italy)

- Thesis title: "*Ricerca delle oscillazioni* ν_μ <-> ν_τ *negli eventi quasi-elastici*" (trad. "*Search of* ν_μ <-> ν_τ *oscillations in quasi-elastic events")*.
- Tutor: Prof. Massimilla Baldo Ceolin (deceased)
- Score: 110/110 (summa cum laude).

PERSONAL SKILLS

Mother tongue(s) Italian

Other language(s)

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	C1	C1	C1	C1	C1
Spanish	A2	A2	A2	A2	A2

Communication skills

I worked in various types of teams, in different positions, acquiring a strong communication ability, always considering human relationships and a friendly environment as the main priority for a successful team work.

Organisational / managerial skills

Working as a team leader for many years, I acquired a strong sense of responsibility and ability in planning activities and managing human resources as well as implementation of standardization and common rules.

Job-related skills

- Design of optics for synchrotron radiation beamlines.
- Synchrotron radiation and conventional X-ray laboratory devices (X-ray sources, X-ray detectors, Diffractometers), specialized in X-ray Single Crystal and Powder Diffraction.
- Wave optics and raytracing simulation tools (Shadow, SRW, XOP, SPECTRA).
- Thermal and structural (CFD/FEA) simulations using Ansys Workbench 17.0.
- CAD design using Dassault CATIA V5, targeted to the automotive sector.
- Architectural design and development of complex software systems.

Digital competence

SELF-ASSESSMENT				
Information processing	Communication	Content creation	Safety	Problem solving
Proficient User	Proficient User	Proficient User	Proficient User	Proficient User

Industrial Certificate: CCAI (Cisco Certified Academy Instructor) – Cisco Systems
Industrial Certificate: Sun Certified Professional J2SE 1.4 – Sun Microsystems

- Advanced knowledge of the following operative systems: Microsoft Windows, MacOSX, Debian and Red Hat based Linux.
- Advanced knowledge of the following programming languages: Python 3, JAVA (J2SE, J2EE, J2ME), NI LabVIEW 2011, Microsoft C#, VB.NET, ASP.NET, ANSI C/C++, XML/XSL, HTML/Javascript, RPG/400.
- Advanced knowledge of the following databases: Oracle, Microsft SQL Server, MySQL.
- Advanced knowledge of the Microsoft Office Suite (Word, Excel, Power Point, Access).

Other skills

- Music (Clarinet and Uilleann pipes).
- Dance (Tango Argentino).

Driving licence B

ADDITIONAL INFORMATION

Referecens

- Prof. Paolo Scardi, Department of Civil, Environmental and Mechanical Engineering, University of Trento, Italy, e-mail: paolo.scardi@unitn.it
- Dr. Manuel Sánchez del Río, Advanced Analysis and Modeling group at the Instrument Support and Development Division, European Synchrotron Radiation Facility, Grenoble, France, email: srio@esrf.fr
- Dr. Ruben Reininger, Senior Physicist at Advanced Photon Source, Argonne National Laboratory, Lemont (IL), USA, e-mail: rreininger@aps.anl.gov

Conferences

- Diffraction Limited Storage Rings (DLSR) Workshop 2018, ALS @ LNLS, Berkeley (USA) 29-31 October 2018, Poster presentation: “Beamline Optics Design and Characterization for the APS Upgrade”
- SPIE Optics + Photonics 2017, San Diego (USA) – 6-11 August 2017, Oral Presentation (invited): “Interoperability and complementarity of simulation tools for beamline design in the OASYS environment”, Demo Session (invited): “OASYS (OrAnge SYnchrotron Suite): an open source graphical environment for X-ray virtual experiments”
- Software for Optical Simulations Workshop (SOS), Elettra-Sincrotrone Trieste and ESRF, Trieste (Italy) – 3-7 October 2016. Local Organizing Committee member and chairman.
- 15th European Powder Diffraction Conference (EPDIC15), IC-CNR, Bari (Italy) – 12-15 June 2016. Poster Presentation: “Microstructural effects of high-energy grinding on poorly soluble drugs: the case study of Efavirenz”
- Diffraction Limited Storage Rings (DLSR) Workshop 2016, DESY, Hamburg (Germany) 8-11 March 2016, Poster presentation: “ShadowOui: A new visual environment for X-ray optics and synchrotron radiation beamline simulations”
- DSE2105. 100 Years of the Debye Scattering Equation, Cavalese (Italy) – 14-18 June 2015
- SPIE Optics + Photonics 2014, San Diego (USA) – 18-22 August 2014, Oral Presentation: “Calculation of the instrumental profile function for a powder diffraction beamline used in nanocrystalline material research”, Poster presentation: “A proposal for an Open Source graphical environment for simulating X-ray optics”, Demo session: “The new Orange-driven SHADOW gui”
- 16th International Workshop on Radiation Imaging Detectors (iWoRiD), Trieste (Italy) – 22-26 June 2014
- 14th European Powder Diffraction Conference (EPDIC14), University of Åhrus (Denmark) – 15-18 June 2014 , Oral Presentation: “ Design and management of a powder diffraction beamline for Line Profile Analysis: a realistic ray-tracing approach”, Poster presentation: “A possible new reference material for line profile analysis”, Poster presentation: “On the Line Profile Analysis of pharmaceutical drugs”
- Workshop NANO, University of Trento (Italy) – 19 March 2014, Oral presentation: “Line Profile Analysis at SR sources: MCX @ Elettra, current state and perspectives”
- VISPY Code Camp, ESRF, Grenoble (France) – 19-21 February 2014
- MEtrology, Astronomy, Diagnostics and Optics Workshop (MEADOW), Trieste (Italy) - 29-30 October 2013
- 13th European Powder Diffraction Conference (EPDIC13), Grenoble (France) – 28-31 October 2012 . Poster presentation: “Evaluation of CZTS stoichiometry effects on band gap energy by Synchrotron Radiation X-ray Diffraction”
- ECo MaTech 2013, European Conference on Materials and Technologies for Sustainable Growth, Bled (Slovenia) – 19-21 September 2013, Oral Presentation: “Method for quantitative measurement of elemental composition of airborne particulate matter by means of X-ray fluorescence spectroscopy”

Publications

- Scardi P., Ermrich M., Fitch A., Huang E.-W., Jardin R., Kuzel R., Leineweber A., Mendoza Cuevas A., Misture S. T., Rebuffi L. & Schimpf C. " Size–strain separation in diffraction line profile analysis", (2018). J. Appl. Cryst. 51.
- Cappelletto E., Firrito C., Pizzato M., Rebuffi L. and Scardi P., "Mechanical activation of Efavirenz: the effects on the dissolution and inhibitory behaviour", Pharmaceutical Development and Technology (2018), DOI: 10.1080/10837450.2018.1469148
- Rebuffi L. and Sanchez del Rio M., "OASYS (OrAnge SYnchrotron Suite): an open-source graphical environment for x-ray virtual experiments", Proc. SPIE 10388 (2017), Advances in Computational Methods for X-Ray Optics IV, 130080S, doi: 10.1117/12.2274263
- Rebuffi L. and Sanchez del Rio M., "Interoperability and complementarity of simulation tools for beamline design in the OASYS environment", Proc. SPIE 10388 (2017), Advances in Computational Methods for X-Ray Optics IV, 1300808, doi: 10.1117/12.2274232
- Rebuffi L., Sanchez del Rio M., Busetto E. and Scardi P., "Understanding the instrumental profile of synchrotron radiation X-ray powder diffraction beamlines", J. Synchrotron Rad. 24 (2017), pp. 622–635. doi: 10.1107/S1600577517005434
- Scardi P., Rebuffi L., Abdellatief M., Flor A. and Leonardi A., "Debye-Waller coefficient of heavily deformed nanocrystalline iron", J. Appl. Cryst. 50 (2017), pp. 508–518. doi: 10.1107/S160057671700022X
- Cappelletto E., Rebuffi L., Flor A. and Scardi P., "Microstructural effects of high-energy grinding on poorly soluble drugs: the case study of efavirenz", Powder Diffr. (2017), published online. doi: 10.1017/S0885715617000161
- Abdellatief M., Rebuffi L., Khosroabadi H., Najdawi M., Abu-Hanieh T., Attal M., Paolucci G., " The SESAME Materials Science Beamline for XRD applications", Powder Diffr. (2017), published online. doi: 10.1017/S0885715617000021
- Rebuffi L. and Sánchez del Río M., "ShadowOui: A new visual environment for X-ray optics and synchrotron beamline simulations", J. Synchrotron Rad. 23 (2016), pp. 1357–1367. doi: 10.1107/S1600577516013837
- Sánchez del Río M., Bianchi D., Cocco D., Glass M., Idir M., Metz J., Raimondi L., Rebuffi L., Reininger R., Shi X., Siewert F., Spielmann-Jaeggi S., Takacs P., Tomasset M., Tonnessen T., Vivo A. and Yashchuk V., "DABAM: an open-source database of x-ray mirrors metrology", .J. Synchrotron Rad. 23 (2016), pp. 665–678. doi: 10.1107/S1600577516005014
- Rebuffi L., Troian A., Ciancio R., Carlino E., Amimi A., Leonardi A. and Scardi P., "On the reliability of powder diffraction Line Profile Analysis of plastically deformed nanocrystalline systems", Scientific Reports 6 (2016), 20712. doi: 10.1038/srep20712
- Rebuffi L., Scardi P., Sánchez del Río M., "Design and management of a powder diffraction beamline for Line Profile Analysis: a realistic ray-tracing approach", Powder Diffr. 30/S1 (2015), pp. S56-S64. doi: 10.1017/S0885715614001328
- Troian A., Rebuffi L., Leoni M. and Scardi P., "Toward a reference material for line profile analysis", Powder Diffr. 30/S1 (2015), pp. S47-S51. doi:10.1017/S0885715614001298
- Fandaruff C., Segatto Silva M.A., Galindo Bedor D.C., Pereira de Santana D., Antunes Rocha H.V., Rebuffi L., Azanza Ricardo C.L., Scardi P. and Cuffini S.L., "Correlation between microstructure and bioequivalence in Anti-HIV Drug Efavirenz", Eur. J. Pharm. Biopharm. 91 (2015), pp. 52–55. doi: 10.1016/j.ejpb.2015.01.020
- Sánchez del Río M., Rebuffi L., Demšar J., Canestrari N., Chubar O., "A proposal for an Open Source graphical environment for simulating X-ray optics", Proc. SPIE 9209 (2014), Advances in Computational Methods for X-Ray Optics III, 92090X, doi:10.1117/12.2061834
- Rebuffi L., Scardi P., "Calculation of the instrumental profile function for a powder diffraction beamline used in nanocrystalline material research", Proc. SPIE 9209 (2014), Advances in Computational Methods for X-Ray Optics III, 92090J, doi:10.1117/12.2063745
- Rebuffi L., Plaisier J.R., Abdellatief M., Lausi A. and Scardi P., "MCX: a Synchrotron Radiation Beamline form X-ray Diffraction Line Profile Analysis", Z. Anorg. Allg. Chem. 640 (2014), pp. 3100-3106, doi: 10.1002/zaac.201400163
- Malerba C., Azanza Ricardo C.L., Valentini M., Biccari F., Müller M., Rebuffi L., Esposito E., Mangiapane P., Scardi P. and Mittiga A., "Stoichiometry effect on Cu2ZnSnS4 thin films morphological and optical properties", J. Renewable Sustainable Energy 6 (2014), 011404. doi:10.1063/1.4866258

- NOMAD collab., “A precision measurement of charm dimuon production in neutrino interactions from the NOMAD experiment”, Physics Letters B 876(2) (2013) pp. 339-375.
- NOMAD collab., “A search for single photon events in neutrino interactions”, Physics Letters B 706(4-5) (2012) pp. 268-275.
- NOMAD collab., “A measurement of coherent neutral pion production in neutrino neutral current interactions in the NOMAD experiment”, Physics Letters B 682(2) (2009) pp. 177-184.
- NOMAD collab., “A study of quasi-elastic muon neutrino and antineutrino scattering in the NOMAD experiment”, Eur. Phys. J. C 63 (2009) pp. 355-381.
- NOMAD collab., “A Precise Measurement of the Muon Neutrino-Nucleon Inclusive Charged Current Cross-Section off an Isoscalar Target in the Energy Range 2.5 <Eν< 40 GeV by NOMAD”, Physics Letters B 660 (2008) 19-25.
- NOMAD collab., “Search for the exotic Θ+ resonance in the NOMAD experiment”, Eur. Phys. J. C 46 (2006) pp. 69-79.NOMAD collab., “Production properties of K*(892) vector mesons and their spin alignment as measured in the NOMAD experiment”, Eur. Phys. J. C 46 (2006) pp. 69-79.
- NOMAD collab., “A study of strange particles produced in neutrino neutral current interactions in the NOMAD experiment”, Nuclear Physics B 700 (2004) pp. 51-68.
- NOMAD collab., “Bose-Einstein Correlations in charged current muon-neutrino interactions in the NOMAD experiment at CERN”, Nuclear Physics B 686 (2004) 3.
- NOMAD collab., “Search for νμ <-> νe oscillations in the NOMAD experiment”, Physics Letters B 570 (2003) pp. 19-31.
- NOMAD collab., “Updated Result from the ντ appearance search in NOMAD”, Physics Letters B 483 (2000) pp. 387-404.