



FABIO ACERBI

Italian Citizen

E-mail: acerbi@fbk.eu;

it.linkedin.com/in/fabioacerbi

SUMMARY

Fabio Acerbi was born in Carpi (Italy), in 1984. He obtained the Bachelor's degree (2006, summa cum laude), in Electronics Engineering from University of Modena and Reggio Emilia (Italy) and the Master's degree (2008, summa cum laude) at Politecnico di Milano, Milano (Italy), where he also received the Ph.D. in 2012.

From 2009 to 2013 he has been Ph.D. student and then research assistant at Politecnico di Milano, working on TCAD simulations, design and characterization of InGaAs/InP Single Photon avalanche diodes (SPADs) for NIR photon detection in physics, biomedical applications, telecommunications and IC testing. He designed and developed innovative structures and novel fast front-end electronic circuits.

Since Apr. 2013 he is with Fondazione Bruno Kessler (FBK), Center for Materials and Microsystems (Trento, Italy), working on design, study and characterization of novel Silicon Photomultiplier (SiPM) and performant read-out electronics.

He is author of more than 90 papers on international journals and conference proceedings.

RESEARCH ACTIVITY

- Dates Apr. 2013 – now
- Institute Fondazione Bruno Kessler (FBK)
- Description Design, development and characterization of new Silicon Photomultiplier with novel structures, with improved detection efficiency and better timing performances. Design and testing of low-noise and fast read-out circuits.

- Dates Gen. 2009 – Mar. 2013
- Institute Politecnico di Milano
- Description Design, analysis and characterization of commercial and novel Single-Photon Avalanche Diodes (SPADs), made in InGaAs/InP, and design of new fast front-end electronic circuits (for physics, biomedical, telecommunication and VLSI testing applications).

- Dates 2010
- Institute Politecnico di Milano
- Description “Temperature analysis of Lithium-Ion Batteries: characterization and modeling”. Experimental analysis of performance variation with temperature, and development of a new extended model.

- Dates 2006
- Institute Università di Modena e Reggio Emilia
- Description Study of wireless sensor networks based on ZIGBEE standard and design of a wireless transceiver at 2.4 GHz on a compact PCB for HVAC applications.

EDUCATION

- Dates January 2009 – December 2011
 - University Politecnico di Milano
- Title of qualification awarded Ph.D. in IT Engineering (obtained on Mar 23, 2012)
 - Thesis title InGaAs/InP Single Photon Avalanche Detectors for the near infrared range
 - Grade Suma cum laude
- Dates September 2009
- Title of qualification awarded Italian qualifying examination for the engineer profession in ICT
 - Grade 98/100
- Dates September 2006 – December 2008
 - University Politecnico di Milano
- Title of qualification awarded Master Degree in Electronic Engineering (obtained on Dec 17, 2008)
 - Thesis title Design and simulation of Avalanche Photodiodes in InGaAs/InP to detect single photons
 - Grade 110/110 cum laude
- Dates September 2003 – July 2006
 - University Università degli studi di Modena e Reggio Emilia, Modena, Italy
- Title of qualification awarded Bachelor's degree in Electronic Engineering (obtained on Jul 20, 2006)
 - Thesis title Wireless sensor networks based on ZIGBEE standard
 - Grade 110/110 cum laude
- Dates September 1998 – July 2003
 - School I.T.I.S. Leonardo da Vinci, Carpi (MO), Italy – Technical high school
- Title of qualification awarded High School Diploma in electronics and telecommunications
 - Grade 100/100

WORK EXPERIENCE

- Dates Mar 2013 - today
- Occupation Researcher
 - Employer Fondazione Bruno Kessler (FBK)
- Description Design and characterization of Silicon photomultipliers (SiPMs).
- Occupation Research assistant
 - Employer Politecnico di Milano [P.za Leonardo da Vinci 32 - 20133 Milano, Italy]
- Description Design, study and characterization of InGaAs/InP SPADs.
- Dates 2007 – 2008
 - Employer Politecnico di Milano [P.za Leonardo da Vinci 32 - 20133 Milano, Italy]
- Description Administrator of the computer network for the student's college (> 300 users).
- Dates Apr 2006 – Jul 2006
 - Employer Embit s.r.l. [via Emilia Est 911 - 41100 Modena, Italy]
- Description Design of a wireless transceiver ZIGBEE (2.4 GHz) and HVAC system.
- Dates 1999 – 2004 (3 months per year)
 - Employer Elettroquadri s.r.l. [via degli Intarsiatori Rolesi, 9, Rolo (RE), Italy]
- Description Construction and testing of switchgears, for automation of machine tools.

TEACHING ACTIVITY

- Dates October 2009 – May 2010
- Employer Politecnico di Milano, Faculty of Information Engineering
- Description Teacher in a practical hands-on course on electronics circuit simulation using the software Cadence/ORCAD.

- Dates March 2010 – July 2010
- Employer Politecnico di Milano, Faculty of Information Engineering
- Description Teacher in a practical hands-on course on microcontrollers and the relative electronics circuits, for students of electronics system.

- Dates March 2010 – July 2010
- Employer Politecnico di Milano, Faculty of Information Engineering
- Description Tutor of the course “Electronics” for students in biomedical engineers.

- Dates March 2011 – July 2011
- Employer Politecnico di Milano, Faculty of Information Engineering
- Description Tutor of the course “Electronics” for students in biomedical engineers.

LANGUAGE SKILLS

- Italian Native language
- English Very good comprehension and production (listening, writing, speaking)
- TESTs BULATS: 90/100 [level CEF: C2] (obtained in 2012)

SKILLS

- Electronics Analog circuit, RF design, Microcontrollers and digital systems, Light sources, photodetector design, Signal acquisition, filtering, Wireless sensors networks.
- Instrumentation Pulsed and CW lasers, Wide-band oscilloscopes, Fast pulsers, Wave-generators, optical set-up, optical microscopes and scientific CCD cameras.
- TCAD simulator Silvaco Athena and Atlas, Synopsys Sentaurus suite
- Programming C, Java, Assembly, MATLAB, LabView.
- Electronic CADs Cadence OrCAD, Eagle design editor, Spice circuits simulator.
- Others Software Microchip MPLab IDE, Hi-tech PICC, Labcenter electronics Proteus, Microsoft Office, OpenOffice, Illustrator, Dreamweaver, etc.

RESEARCH PROJECTS

- 2020-now Project EPIQUS (Electronic-photonic integrated quantum simulator platform)
- 2019-2020 ATTRACT project “POSICS” (Position-sensitive SiPMs compact and scalable beta-camera)
- 2019-2020 ATTRACT project “SP-LADOS” (Innovative single-photon large-area optical probe for diffuse optical spectroscopy)
- 2017-2018 Design and development of array of silicon photo-multipliers, with extended sensitivity in the NIR, for time of flight (ToF) applications,
- 2015-2017 Design and development of new pixelated sensor based on pinned photodiode, for distance measurements, for Heptagon Micro Optics (part of AMS group), an important company in imaging/mobile market.
- 2013-2017 “INSERT” (Development of an integrated SPECT/MRI system for enhanced stratification of brain tumor patients prior to patient-specific radio-chemo therapy and early assessment of treatment efficacy)
Founded by: European community (Seventh Framework Programme)
- 2014-2017 “SiQuero”: “On silicon chip quantum optics for quantum computing and secure

communications”

- 2013-2014 “**SUBLIMA**”: *SUB nanosecond Leverage In PET/MR ImAging* (development of simultaneous, solid-state PET/MR technology for concurrent functional and anatomical imaging with unsurpassed image quality)
- 2010-2012 “Design and implementation of a new sensor for the detection of single photons in InGaAs/InP technology and related control electronics”. Founded by *Micro Photon Devices (MPD)*.
- 2012 “Multichannel microelectronics for arrays of Single-Photon detectors and time-resolved processing for the Optical Spectroscopy of biological tissues”
Founded by: *MIUR (Italian Ministry of Education, Universities and Research)*

INTERNATIONAL CONFERENCES

- May 2014 (INVITED) “Fotonica 2014”: Italian conference photonics technologies. Napoli.
- May 2014 “PSMR 2014” - Kos (Greece)
- June 2014 “NDIP 2014”: New development in Photodetection, Tours (France)
- May 2015 “Fotonica 2015”: Italian conference on photonics technologies, Turin (Italy)
- July 2015 “PhotoDet 2015”, Moscow (Russia)
- July 2015 “Single Photon Workshop 2015”, Ginevra (Switzerland)
- Nov 2016 “IEEE Nuclear science symposium, NSS 2016”, Strasburg (France)
- Jun 2017 2017 International Image Sensor Workshop (IISW), Hiroshima (Japan)
- Jul 2017 “NDIP 2017”: New development in Photodetection, Tours (France)
- Nov 2018 (INVITED) “PD18”: 5th International Workshop on New Photon-Detectors
- Oct 2019 “Single photon workshop 2019”, Milano, Italy

AWARDS

- 2018 “*National Scientific Qualification*”, obtained by Italian Ministry of Education, universities and research (MIUR)
- 2014 “*Best PhD Thesis in Optoelectronics*” AWARD 2013, by IEEE Photonics Society Italian chapter.
- 2014 “Best poster presented at the conference NDIP 2014”.
- 2009 “degree awards”: Prize of 1000 € awarded at the end of master degree.
- Scholarships
 - 4 scholarship won during bachelor’s and master degrees
 - 1 scholarship on specific research theme won for the 3 years Ph.D.

SEMINARS

- 2019 – Politecnico di Milano “Inkjet printed electrochemical organic electronics”
- 2010 – Politecnico di Milano “Temperature analysis of Lithium-Ion Batteries: characterization and modeling”
- 2015 – FBK (Trento) “Single-Photon avalanche diode (SPAD) and Silicon Photomultiplier (SiPM)”
- 2019 – SQUAD 2019 (Trento) “Silicon photomultipliers”