PERSONAL INFORMATION Francesco Ficorella

ACTUAL POSITION Researcher / Head of Unit (ad interim)

EDUCATION “Dottore di ricerca” Degree (Ph. D. equivalent) in Information and Communication Technologies

WORK EXPERIENCE

From May 2007 **Researcher**

Fondazione Bruno Kessler, Via Sommarive 18, 38123 Povo (TN), Italy
Sensors & Devices Center
MNF - MicroNano fabrication Facility operations Research Unit

From 2026
Ad Interim Head of MNF operations Research Unit

From 2023
Coordinator of MNF’s Back-end Area

From 2018
Responsible of MNF’s industrial devices development and production
Responsible of MNF’s aerospace-related devices development and production Coordinator of MNF’s Testing Area

Working sector
Sensors and Devices design, Testing procedure, Data analysis and software development

- Development of customized test-benches for T&QA applications
- R&D on radiation sensors and electro/optical industrial sensors
- R&D on rad-hard devices for aerospace applications

February 2007 – May 2007 **POST-DOC Scholarship** at the Department of Information and Communication Technologies of the University of Trento for the project “Characterization of hydrogen sensors based on the Kelvin Probe principle”. Team: DIT University of Trento, FBK-irst (ex ITC-irst) MTLab divi-sion, DIE University of Rome “Tor Vergata”.

January 2005 - November 2006 **Analog designer** in 3DARCH Project at ITC-irst, SOI division, as part of the Ph.D. activity. Team: ITC-irst SOI division, CNRC-NRC.

PATENTS

EP3425428B1 ***“Radiation detection element, radiation detector and radiation detection apparatus”***

- **Inventors**: Nicola Zorzi, Gabriele Giacomini, Giacomo Borghi, Antonino Picciotto, **Francesco Ficorella**, Daisuke Matsunaga
- **Current Assignee**: Fondazione Bruno Kessler, Horiba Ltd
- Filling date: 06-07-2018

DE1120180028427T5 ***“Radiation detector and radiation detecting device”***

- **Inventors**: Antonino Picciotto, **Francesco Ficorella**, Nicola Zorzi, Daisuke Matsunaga, Kengo Yasui
- **Current Assignee**: Fondazione Bruno Kessler, Horiba Ltd
- Filling date: 28-05-2018

IT201700004661A1 ***“Dispositivo per la misura di trasmittanza di pietre, in particolare diamanti”***

- **Inventors**: Daniele Covi, **Francesco Ficorella**
- Filling date: 17-01-2017

TEACHING ACTIVITIES

Academic Years 2005/2006, 2006/2007, 2007/2008, 2008/2009

Teaching assistant for the course of "**Elettronica 1**" (Prof. G.-F. Dalla Betta) that was part of the Telecommunication Engineering program at the University of Trento - Trento (Italy)

Academic Years 2009/2010, 2010/2011, 2011/2012, 2012/2013

Teaching assistant for the course of "**Elettronica**" (Prof. G.-F. Dalla Betta) that was part of the Telecommunication Engineering program at the University of Trento - Trento (Italy)

Academic Year 2006/2007

Teaching assistant for the course of "**Elettronica Analogica**" (Prof. G. Soncini) that was part of the Mechatronics Engineering program at the University of Trento - Trento (Italy)

EDUCATION AND TRAINING

21 December 2006

"Dottore di ricerca" Degree (Ph. D. equivalent) in Information and Communication Technologies

EQF Level 8

University of Trento - Trento (Italy)

Dissertation on "3DJAM - A Linear CMOS Sensor for 3D Vision with merged I-TOF and OT Techniques"

- Sensors and Microsystems expertise enhancement
- Advanced knowledge of layout, process fabrication and testing of silicon devices

July 2003

Qualified to operate as professional Electronic Engineer

University of Rome "Tor Vergata" - Rome (Italy)

Public examination for registration with the Italian Order of Electronic Engineers (Esame di Stato per Ingegneri Elettronici)

May 2003

Master's Degree (Master of Science equivalent) in Electronic Engineering with full marks (110/110 cum laude)

EQF Level 7

University of Rome "Tor Vergata" - Rome (Italy)

Dissertation on "Studio del comportamento di strutture tipo 'cantilever' solleci-tate da fotoni" (Study on 'cantilever' structures energized by photons)

- Sensors and Microsystems expertise
- Knowledge of layout, process fabrication and testing of silicon devices

PERSONAL SKILLS

Mother tongue(s): Italian

Other language(s)

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	B2	B2	B2	B2	B2

Levels: A1/A2: Basic user - B1/B2: Independent user - C1/C2 Proficient user
Common European Framework of Reference for Languages

Job-related skills

- Advanced skills on **IC Analogue Design** (design, simulation and layout) with Cadence ICFB software (AMS C35B4 and AMI Semiconductor C05M-D Tech-nologies)
- Advanced skills on **IC Analogue Design** (verification) with Calibre in Mentor Graphics software
- Advanced skills with general purpose **laboratory equipment and electro-optical test equipment**
- Advanced skills on **control-software development** with LabView software
- Advanced skills on **device layout** design with Tanner Tools software
- Good skills **on PCB design** and route with Cadence OrCAD software

That skills have been acquired during **more than 15 years on R&D activities** on device/sensors

Digital competence

SELF-ASSESSMENT

Information processing	Communication	Content creation	Safety	Problem solving
Proficient user	Independent user	Independent user	Independent user	Proficient user

Levels: Basic user - Independent user - Proficient user
Digital competences - Self-assessment grid

- Good skills on math analysis with Origin and Matlab software
- Good skills on C/C++, Python programming
- Good skills on Microsoft Office applications

Other skills
- 3D design tools: Autodesk Fusion 360 and Autodesk Tinkercad
- 3D printing: FDM techniques for fast prototyping

Driving licence B

ADDITIONAL INFORMATION

Training Courses
- **CMOS Analog Integrated Circuit Design**. Phillip E. Allen (Georgia Institute of Technology) ITC-irst and University of Trento - Trento (Italy). Subject: Advanced methodologies in CMOS Analog IC Design
- **Organic Semiconductors Electronic**: Principles, Devices, Applications Elet-tronica a Semiconduttori Organici: Principi, Dispositivi ed Applicazioni. Politecnico di Milano - Milan (Italy). Subject: Electronic Devices and Principles based on Organic Semiconductors
- **ADVanceMS Course**. Diego Lasagna for Mentor Graphics. ITC-irst - Trento (Italy). Subject: Analog simulation with ADVanceMS tool
- **Using Calibre DRC & LVS Course**. Stefano Pettazzi for Mentor Graphics. ITC-irst - Trento (Italy). Subject: Calibre DRC and LVS tools analysis in DESIGNrev

Honours and awards
- **Best Poster Award at the Conference AISEM 2004**, the 9th Italian Conference on Sensors and Mycrosystems, Ferrara, Italy, February 8-11, 2004
- **Scholarship given by A.D.I.S.U.** (Association for the Rights to University Study) in the academic years 1997/1998, 1998/1999, 1999/2000, 2000/2001 and 2001/2002
- **Exemption for merit from university fees** for the academic years 1996/1997, 1997/1998, 1998/1999, 1999/2000, 2000/2001 and 2001/2002

Most Relevant Publications

For a complete list, please visit this link.

- Hinger, V.; **Ficorella, F**.; Zhang, J.; et al., ***Resolving soft X-ray photons with a high-rate hybrid pixel detector***, in «FRONTIERS IN PHYSICS», vol. 12, 2024
- Terzo, S.; **Ficorella, F**.; Vannoli, L.; et al., ***Novel 3D Pixel Sensors for the Upgrade of the ATLAS Inner Tracker***, in «FRONTIERS IN PHYSICS», vol. 9, 2021
- Gaiardo, A.; Novel, D.; Scattolo, E.; Crivellari, M.; Picciotto, A.; **Ficorella, F**.; Iacob, E.; Bucciarelli, A.; Petti, L.; Lugli, P.; Bagolini, A., ***Optimization of a Low-Power Chemoresistive Gas Sensor: Predictive Thermal Modelling and Mechanical Failure Analysis***, in «SENSORS», vol. 21, n. 3, 2021, pp. 783 –
- Paternoster, G.; Borghi, G.; Boscardin, M.; Cartiglia, N.; Ferrero, M.; **Ficorella, F**.; Siviero, F.; Gola, A.; Bellutti, P., ***Trench-Isolated Low Gain Avalanche Diodes (TI-LGADs)***, in «IEEE ELECTRON DEVICE LETTERS», vol. 41, n. 6, 2020, pp. 884 – 887
- Mandurrino, M.; Arcidiacono, R.; Boscardin, M.; Cartiglia, N.; Dalla Betta, G. -F.; Ferrero, M.; **Ficorella, F**.; Pancheri, L.; Paternoster, G.; Siviero, F.; Sola, V.; Staiano, A.; Vignati, A., ***Analysis and numerical design of Resistive AC-Coupled Silicon Detectors (RSD) for 4D particle tracking***, in «NUCLEAR INSTRUMENTS & METHODS IN PHYSICS RESEARCH. SECTION A, ACCELERATORS, SPECTROMETERS, DETECTORS AND ASSOCIATED EQUIPMENT», vol. 959, 2020 , pp. 163479 –
- Mazza, S. M.; Estrada, E.; Galloway, Z.; Gee, C.; Goto, A.; Luce, Z.; McKinney-Martinez, F.; Rodriguez, R.; Sadrozinski, H. F. -W.; Seiden, A.; Smithers, B.; Zhao, Y.; Cindro, V.; Kramberger, G.; Mandić, I.; Mikuž, M.; Zavrtanik, M.; Arcidiacono, R.; Cartiglia, N.; Ferrero, M.; Mandurrino, M.; Sola, V.; Staiano, A.; Boscardin, M.; Betta, G. F. Della; **Ficorella, F**.; Pancheri, L.; Paternoster, G., ***Properties of FBK UFSDs after neutron and proton irradiation up to 6·10^{15} neq/cm^2***, in «JOURNAL OF INSTRUMENTATION», vol. 15, n. 04, 2020 , pp. T04008 - T04008
- Oide, H.; Alimonti, G.; Boscardin, M.; Betta, G. -F. Dalla; Darbo, G.; **Ficorella, F**.; Fumagalli, E.; Gariano, G.; Gaudiello, A.; Gemme, C.; Meschini, M.; Messineo, A.; Mendicino, R.; Ronchin, S.; Rovani, A.; Ruscino, E.; Sultan, D. M. S.; Zorzi, N.; Furelos, D. Vazquez, ***INFN-FBK developments of 3D sensors for High-Luminosity LHC***, in «NUCLEAR INSTRUMENTS & METHODS IN PHYSICS RESEARCH. SECTION A, ACCELERATORS, SPECTROMETERS, DETECTORS AND ASSOCIATED EQUIPMENT», vol. 924, 2019 , pp. 73 – 77
- Rashevskaya, I.; Burger, W.; Manea, C.; Boscardin, M.; Bellutti, P.; **Ficorella, F**.; Ronchin, S.; Zorzi,

N.; Bosisio, L.; Orzan, G.; Giacomini, G.; Ambroglini, F.; Ambrosi, G., ***Double-sided strip sensors for the Limadou-CSES project***, in «POS PROCEEDINGS OF SCIENCE» Proceedings of the 25th International Workshop on Vertex Detectors, Trieste, SISSA, vol.PoS(Vertex 2016), n. 064, 2016 , pp. 1- 7 ,

- R. Quaglia, L. Bombelli, P. Busca, C. Fiorini, M. Occhipinti, G. Giacomini, **F. Ficorella**, A. Picciotto, C. Piemonte, ***Silicon Drift Detectors and CUBE Preamplifiers for High-Resolution X-ray Spectroscopy***, in «IEEE TRANSACTIONS ON NUCLEAR SCIENCE», vol. 62, n. 1, 2015, pp. 221 -227
- R. Quaglia, C. Fiorini, L. Bombelli, A. D. Butt, G. Giacomini, **F. Ficorella**, A. Picciotto, C. Piemonte, ***Monolithic arrays of SDDs and low noise CMOS readout for X-ray spectroscopy measurements in nuclear physics experiments***, in «JOURNAL OF INSTRUMENTATION», vol. 10, n. C03001, 2015, pp. 1 -8
- G. Paternoster,M. Zanuccoli,P. Bellutti,L. Ferrario,**F. Ficorella**,C. Fiegna,P. Magnone,F. Mattedi,E. Sangiorgi, ***Fabrication, characterization and modeling of a silicon solar cell optimized for concentrated photovoltaic applications***, in «SOLAR ENERGY MATERIALS AND SOLAR CELLS», vol. 134, 2015, pp. 407 -416
- M. Bregoli, S. Ceriani, A. Collini, **F. Ficorella**, G. Giacomini, P. Bellutti, S. Hernandez, M. Zahir, K. Lundmark, ***Recent achievements from a new European space optoelectronic component supplier***, Conference Proceedings, 2014, (ISROS 2014,Tolosa, Francia,16-19/06/2014)
- V. Mulloni, F. Solazzi, **F. Ficorella**, A. Collini, B. Margesin, ***Influence of temperature on the actuation voltage of RF-MEMS switches***, in «MICROELECTRONICS RELIABILITY», vol. 53, n. 4, 2013, pp. 706 -711
- **Ficorella, F**.; Dalla Betta, G. -. F.; Viarani, L.; Perenzoni, M.; Stoppa, D.; Gonzo, L., ***3DJAM: A Linear CMOS Sensor for 3D Vision with Merged I-TOF and OT Techniques***, Proceeding of the 2006 Ph. D Research in Microelectronics and Electronics, 2006 , pp. 261- 264 ,

(2006 Ph. D Research in Microelectronics and Electronics (PRIME)

Francesco Ficorella

STATEMENT

I hereby authorize for the treatment of my personal data in compliance with the D.Lgs 196/2003 and GDPR UE 2016/679. The reported information are given to the senses and for the effects of the articles 46 and 47 DPR 445/2000.

Trento 20/05/2026