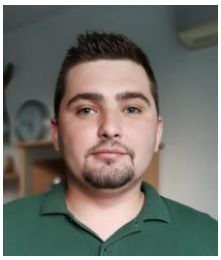
Curriculum vitae

PERSONAL INFORMATION

Vlad-Mihai PLACINTA



Romania

Sex Male | Date of birth | Nationality Romana

WORK EXPERIENCE

15/06/2021 – Present
15/02/2021 – 15/06/2021
01/10/2019 – 12/02/2021
16/03/2016 – 01/10/2019
11/02/2015 – 16/03/2016
12/08/2014 – 11/02/2015

Technology Development Engineer grade III (IDT III)
Technology Development Engineer (IDT)
Electronics Engineer
Scientific Research Assistant
Electronics Engineer
Junior Electronics Engineer

Horia Hulubei National Institute for R&D in Physics and Nuclear Engineering (IFIN-HH)
Reactorului 30, RO077125 Bucharest-Magurele (Romania)
www.nipne.ro

I am part of the Romanian group from LHCb Collaboration, which is one of the four biggest experiments at the LHC accelerator, located at CERN, Geneva, Switzerland.

Tasks and activities:

- Experimental studies for testing, evaluating and qualifying the radiation hardness of various sub-micron integrated circuits, mostly FPGAs (Field Programmable Gate Arrays) and ASICs (Application Specific Integrated Circuits), proposed to operate in harsh environments with radiation background such as: particle accelerators (e.g., LHC) and space (e.g., ISS). These studies include also the preparation of the experimental setups that contains fast data acquisition systems capable of detecting and measuring Single Event Effects (SEE) and aging effects due to Total Ionizing Dose (TID). Such effects are induced by radiation in semiconductors or oxide layers (as well as at the S_i – S_iO_2 interface layers) of an electronic device/circuit;
- Development of custom uC/FPGA/SoC/ASIC based readout systems;
- High-speed PCB Design (LVDS, DDR3, Ethernet, SFP/SFP+, etc.) with Altium Designer;
- FPGA configuration using Xilinx-Vivado/Microchip-Libero IDE/Intel-Quartus by using VHDL language:
  - communication protocols: UART, SPI, I2C, parallel bus, Ethernet;
  - FPGA firmware development for use in irradiation tests;
  - FPGA firmware error mitigation;
- Development of complex LabVIEW applications;
- High speed digitizers;
- Time to digital converters (TDC-in-FPGA);
- Custom switching mode power supplies;
- Reports to the LHCb collaboration at CERN, either remote or in person;
- Results dissemination at various international conferences and workshops;
- Teaching seminaries and mentoring students for bachelor and master thesis;
- Travelling abroad for experiments at various facilities from various countries (Belgium, Italy, Germany, Switzerland etc.).

Romanian LHCb group web page

Business or sector Research & Development

22/12/2020 – Present
17/03/2016 – 21/12/2020
26/08/2014 – 16/03/2016

PostDoc Researcher
PhD Student
Master Student

CERN, Geneva (Switzerland) www.cern.ch

Appointments: Team leader deputy of the Romanian LHCb group (16/01/2023 - Present)

Being part of the LHCb collaboration, and employed by IFIN-HH, most of my work done at IFIN-HH is for the LHCb collaboration. I was involved together with other collaborators from all over the world (mostly Europe, e.g., UK - Cambridge University) in hardware design, testing, assembly and commissioning of the electronics proposed to be used in the new and redesigned RICH sub-detectors for the LHCb experiment during long shutdown 2 (LS2) of the LHC between 2015 - 2022. Most of my work (and my PhD thesis) was around establishing the reliability of a commercial FPGA, Xilinx's KINTEX-7, proposed to be used as a digital readout of the LHCb-RICH sub-detectors. Various testing routines along with a custom test bench were designed in order to test specific FPGA resources in a radiation environment as well as to mitigate various hardware and software failures and errors induced by radiation. Apart from this, I was involved together with other colleagues in the assembly, testing and commissioning of the RICH sensor columns during 2020 – 2022. As of July 2022, the newly designed RICH system is working and taking collision data with a 40 MHz rate.

The next upgrade of the LHCb-RICH system is planned for 2026 – 2028, when the electronics readout will be redesigned and replaced. Currently, a vast R&D campaign is undergoing the evaluate possible solutions for a new readout system and more performant than the actual one. This includes the evaluation of various prototyping readout systems in the test beam area at the SPS irradiation facility from CERN.

LHCb web page

Business or sector Research & Development

EDUCATION AND TRAINING

10/2015 – 10/2020

PhD Studies

Polytechnic University of Bucharest, Bucharest (Romania)

Telecommunications and Information Technology Doctoral School (SDETTI)
http://www.sdettib.pub.ro/

PhD thesis name: **"Complex Integrated Circuits in the Radiation Environment at the LHCb High Energy Physics Experiment and Extrapolation to the Case of Space-based Experiments"**

Mark**: Excellent (Summa cum laudae)**

PhD Thesis Link**:** https://cds.cern.ch/record/2748584?ln=en **(**last retrieved on 21-Jun-2021)

10/06/2019 – 21/06/2019

Certificate of attendance of GRIDS 2019

TRIUMF facility, University of British Columbia, Vancouver, British Columbia (Canada)

"GRIDS 2019 - Graduate Instrumentation and Detector School" (GRIDS 2019)

Topics: detectors and instrumentation for modern physics and particle physics experiments, interaction of radiation with matter, semiconductor radiation detectors, front-end and readout electronics, etc.

GRIDS 2019 web page (last retrieved on 21-Jun-2021)

02/07/2018 – 06/07/2018

Certificate of attendance of Third Barcelona Techno Week

Institute of Cosmos Sciences, Barcelona (Spain)

Topics: interaction of radiation with matter, semiconductor radiation detectors, CMOS technology, pulse processing electronics, sensor design and interconnects, light detection in semiconductors (photodiodes, APDs, SPADs, SiPMs, etc), front-end and readout electronics, etc.

Third Barcelona Techno Week web page (last retrieved on 21-Jun-2021)

23/10/2017 – 26/10/2017

Certificate of attendance of SERESSA 2017

Technical University of Munich (TUM), Munich (Germany)

The 13th International School on the Effects of Radiation on Embedded Systems for Space Applications (SERESSA 2017)

Topics: radiation environment, spacecraft anomalies, single-event effects (SEE), total dose effects (TID), radiation effects in power systems, architecture hardening in analog, and digital circuits and in memories, software hardening, effects in FPGAs, rate prediction, radiation and testing laser testing.

SERRESA 2017 website (last retrieved on 21-Jun-2021)

20/02/2017 – 03/03/2017

Certificate of attendance of ESIPAP's Module 2

European Scientific Institute (ESI), Archamps (France)

The European School in Instrumentation for Particle and Astroparticle Physics (ESIPAP 2017)

Topics: detector technologies, signal processing and electronics, analog electronics, noise calculation in front-end electronics, low temperature detectors, photon counting imaging, VME bus and modular electronics, trigger and data acquisition software, data handling technologies, trigger etc.

ESIPAP website (last retrieved on 21-Jun-2021)

23/01/2016 – 03/02/2016

Graduation diploma of ISOTDAQ 2016

Weizmann Institute of Science, Tel Aviv - Rehovat (Israel)

The International School of Trigger and Data Acquisition (ISOTDAQ 2016)

Topics: Analog and Digital Electronics, FPGA, DAQ, LabVIEW, LabVIEW FPGA, Photomultiplier tubes, Microcontrollers, etc.

ISODAQ 2016 webpage (last retrieved on 21-Jun-2021)

10/2013 – 07/2015

Master in Advanced Techniques In Machinery And Electrical Drives

University "Ştefan cel Mare" of Suceava, Suceava (Romania)
www.usv.ro

Faculty of Electrical Engineering and Computer Science

Master degree. (2 years)

Master thesis name: **"Experimental test bench for studies of photomultiplier tubes used in High Energy Physics (HEP)"**

For this thesis, I designed a test bench for testing a 64-channel multi-anode photomultiplier tube (MaPMT), **R11265-103-64**. The test bench was based on a black box in which the MaPMT and the fast electronics circuitry to read-out its anode signals were placed. The MaPMT was powered from a negative high voltage power supply which was remote controlled by a custom LabVIEW application in order to monitor and to ramp-up/ramp-down the tube's voltage from 0 to - 950 V and vice versa. Various basic tests of the MaPMT were carried out, and most of the results were to establish the dark current rates on each MaPMT channel.

10/2009 – 07/2013

Applied Electronics Engineer

University "Ştefan cel Mare" of Suceava, Suceava (Romania)

www.usv.ro

Faculty of Electrical Engineering and Computer Science

Bachelor degree. (4 years)

Bachelor thesis name: **"Designing a custom SMPS that can be monitored and controlled by a LabVIEW GUI via a Bluetooth interface"**

For this thesis I designed a custom SMPS in boost configuration using the TL494 IC, on which its error opamp feedback voltage was controlled by using an 8-bit microcontroller. In this way, the output

voltage was controlled. This power supply was used to power a laptop with 19 V and using 12 V as input voltage. By using LabVIEW, besides its output power control, a lot of parameters were monitored (efficiency, temperature etc.) in order to fully characterize the SMPS.

09/2005 – 06/2009

Automation Technician

Technical College "Samuil Isopescu" Suceava, Suceava (Romania)

High school studies.

PERSONAL SKILLS

Mother tongue(s): Romanian

Foreign language(s)

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	C1	C1	B2	B2	B2

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

Communication skills

Good communication skills gained by participating at various international conferences and workshops where I presented my work to the audience.

Organisational / managerial skills

Good organizer of time and the activities that I undertake, in order to archive maximum efficiency. I also supervise students to complete their tasks either at work or during their bachelor/master thesis programme.

Job-related skills

Hardware: full design, implementation (assembly) and testing of: embedded systems, FPGA-based boards, uC-based boards, SoC boards;

PCB Design: Multi-layer boards using Altium Designer;

LabVIEW: over 7-year experience (CLAD certificate);

Microcontrollers: Atmel, Microchip and others; (intermediate user)

FPGA: VHDL using VIVADO (Xilinx), Quartus (Intel-Altera) and Libero IDE (Microchip). (Intermediate user)

Digital skills

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

Digital skills - Self-assessment grid

ADDITIONAL INFORMATION

Fields of interest

Analogue and Digital Electronics;

Switching Mode Power Supplies;

Monitoring and Data Processing Systems;

Data Acquisition Systems;

Low Power Drive Applications;

FPGAs/SoC/ASICs and microcontrollers-based systems;

Radiation effects on the semiconductor devices;

Space and accelerator readout systems;

Environmental and air quality monitoring;

Medical Engineering;

Electrically Propelled Applications;

Robotics.

Prizes Awarded

As a participant:

- First Prize awarded at the student scientific session **ELSTUD '14** with the project entitled **"Controlling an electrically propelled car using balance-based systems"**, June 2014, Suceava, Romania. ELSTUD'14 webpage (last retrieved on 16-dec-2018)
- Mention awarded at the scientific session of the students with the project entitled **" System for highlighting the emotional states by measuring skin conductance "**, May 2014, Cluj, Romania.
- Special prize at the contest **"Mihail Konteschweller Microcontrollers and Application 2013 edition"** for the project entitled **"Monitoring and control parameters of a Switching Mode Power Supply"**, May 2013, Iasi, Romania. Contest web page (last retrieved on 15-Oct-2018)

As a mentor:

I mentored a team formed from Vlad Niculescu (bachelor UPB-ETTI) and Ovidiu Emanuel HUTANU (UTI-ETTI) which together participated at the following competitions:

- Top 15 projects from 100 at **"Xilinx Open Hardware 2016"** with the project name **"High Speed FPGA DAQ system with EDA and EKG extension"**. Contest web page (last retrieved on 16-Dec-2019)
- Honorable Mention awarded at european phase of **Digilent Design Contest** for the project entitled **"Custom High Speed DAQ system with FPGA",** May 2016, Cluj-Napoca, Romania. Contest web page (last retrieved on 16-Dec-2019)
- Second prize and 4 special prizes from Continental automotive, Infineon, Microchip, Silicon Service awarded at **"Mihail Konteschweller Microcontrollers and Application 2013 edition"** for the project entitled **"Low-Cost Portable Digital Oscilloscope"**, April 2016, Iasi, Romania. Contest web page (last retrieved on 15-Oct-2018)

Presentations given at various conferences and workshops

- **V. M. Placinta**, L. N. Cojocariu and F. Maciuc, *A Dedicated and Versatile System for Testing the Radiation Hardness of Various Integrated Circuits*, **Topical Workshop on Electronics for Particle Physics (TWEPP 2022)**, September 19 – 23 2022, University of Bergen, Bergen, Norway, online; open access (last retrieved on 19-Jan-2023)
- **V. M. Placinta**, L. N. Cojocariu and F. Maciuc, *Experimental Test Bench for Evaluating the Radiation Tolerance of Integration Circuits in Radiation Environments*, **20th International Balkan Workshop on Applied Physics and Materials Science (IBWAP 2022)**, July 12 – 15 2022, Ovidius University of Constanta, Constanta, Romania; (poster)
- **V. M. Placinta**, L. N. Cojocariu and F. Maciuc, *Investigation of Radiation-Induced Effects in a Front-end ASIC designed for Photon Counting Sensor Systems*, **Topical Workshop on Electronics for Particle Physics (TWEPP 2021)**, September 20 – 24 2021, online; open access (last retrieved on 19-Jan-2023)
- **V. M. Placinta**, L. N. Cojocariu and F. Maciuc, *Investigations of Proton Induced Radiation Effects in 0.15 µm CMOS Antifuse FPGA*, **Topical Workshop on Electronics for Particle Physics (TWEPP 2019)**, September 4 – 9 2019, University of Santiago de Compostela, Santiago de Compostela, Spain; open access (last retrieved on 16-Dec-2019)
- **V. M. Placinta**, L. N. Cojocariu and F. Maciuc, *Radiation Hardness Assurance of Field Programmable Gate Arrays in LHC Experiments*, **19th International Balkan Workshop on Applied Physics and Materials Science (IBWAP 2019)**, July16 – 19 2019, Ovidius University of Constanta, Constanta, Romania; (poster)
- **V. M. Placinta**, L. N. Cojocariu and C. Ravariu, *I/O Blocks Reliability for an SRAM-Based FPGA when Exposed to Ionizing Radiation*, **41st International Semiconductor - Conference CAS 2018**,

October 10 – 12 2018, Sinaia, Romania; Conference web page (last retrieved on 16-Dec-2019)

- **V. M. Placinta**, L. N. Cojocariu and F. Maciuc, *Investigations of Proton Induced Radiation Effects in 0.15 µm CMOS Antifuse FPGA*, **Topical Workshop on Electronics for Particle Physics (TWEPP 2018)**, September 17 – 21 2018, KU Leuven, Antwerp, Belgium; LHCb-TALK-2018-473 (last retrieved on 16-Dec-2019)
- **V. M. Placinta**, L. N. Cojocariu, *Radiation Hardness of Field Programmable Gate Arrays in LHC Experiments*, **SAD -ETTI symposium,** Bucharest, Romania, July 2017 (presentation + poster) SAD-ETTI Symposium (last retrieved on 16-Dec-2019)
- **V. M. Placinta**, L. N. Cojocariu, *Radiation Hardness of Field Programmable Gate Arrays in LHC Experiments*, **Third Barcelona Techno Week – Course on semiconductor detectors**, Barcelona, Spain, July 2017 (poster) Third Barcelona Techno Week (last retrieved on 16-Dec-2019)
- **V. M. Placinta**, L. N. Cojocariu and C. Ravariu, *Evaluating the Switching Mode Power Supplies Used in Radiation Hardness Tests of Integrated Circuits*, **40th International Semiconductor Conference (CAS 2017)**, October 10 – 12 2018, Sinaia, Romania, October 2017;
- **V. M. Placinta**, *First Results on KINTEX-7 FPGA testing in mixed field radiation at CHARM facility*, **Topical Workshop on Electronics for Particle Physics 2017**, Santa Cruz Institute of Particle Physics (SCIPP), California, USA, September 11 – 14 2017; open access (last retrieved on 16-Dec-2019)
- **V. M. Placinta** and L. N. Cojocariu, *Radiation Hardness Studies and Evaluation of SRAM-Based FPGAs for High Energy Physics Experiments*, **Topical Workshop on Electronics for Particle Physics 2017**, Santa Cruz Institute of Particle Physics (SCIPP), California, USA, September 11 – 14 2017; open access (last retrieved on 16-Dec-2019)
- **V. M. Placinta** and L. N. Cojocariu, *Test Bench Design for Evaluating the Performance of Multi-anode Photomultiplier Tuber*, **17th International Balkan Workshop on Applied Physics and Material Science**, Ovidius University of Constanta, Constanta, Romania, July 11 – 14 2017; Conference web page (last retrieved on 16-Dec-2019)
- **V. M. Placinta** and L. N. Cojocariu, *Test Bench for ASIC radiation hardness evaluation*, **Workshop on Sensors and High Energy Physics (SHEP 2016)**, Stefan Cel Mare University of Suceava, Suceava, Romania, October 21 – 22 2016; open access (last retrieved on 16-Dec-2019)
- **V. M. Placinta,** L. N. Cojocariu, et al, *Kintex-7 Irradiation, Test Bench and Results*, **Topical Workshop on Electronics for Particle Physics 2016**, Karlsruhe Institute of Technology (KIT), Karlshure, Germany, September 26 – 30 2016. open access (last retrieved on 16-Dec-2019)

Teaching/Seminaries

- Vlad-Mihai Placinta, "**Introduction to Microcontrollers**", invited seminary at the Faculty of Physics, University of Bucharest (May 18, 2017) open access (last retrieved on 16-Dec-2019)

Articles and Conference Proceedings

- **V. M. Placinta**, L. N. Cojocariu, F. Maciuc, M. Straticiuc, S. Mattiazzo, L. Silvestrin and A. Candelori, *Measurements of Radiation Effects in an Antifuse FPGA*, **Nuclear Instr. And Methods in Physics Research A**, 1055, 168551, Oct. 2023, open access (last retrieved on 25-Aug-2023);
- L. N. Cojocariu, D. Foulds-Holt, F. Keizer, **V. M. Placinta**, and S. Wotton, *A multi-channel TDC-in-FPGA with 150 ps bins for time-resolved readout of Cherenkov photons*, **Proceedings of 11th International Workshop on Ring Imaging Cherenkov Detectors (RICH 2022)**, **Nuclear Instr. And Methods in Physics Research A**, 1055, 168483, Oct. 2023, open access (last retrieved on 25-Aug-2023);
- **V. M. Placinta**, L. N. Cojocariu and F. Maciuc, *A Dedicated and Versatile System for Testing the Radiation Hardness of Various Integrated Circuit*, **in Proceedings of Topical Workshop on Electronics for Particle Physics 2022**, **Journal of Instrumentation**, JINST 18 C01053, Jan. 2023, open access (last retrieved on 25-Aug-2023);
- **V. M. Placinta**, L. N. Cojocariu, C. de la Taille, S. Blin-Bondil, S. Mattiazzo, L. Silvestrin, A. Candelori and F. Maciuc, *Radiation effects in a SPACIROC2 ASIC and long-term reliability*, **Journal of Instrumentation**, JINST 16 P07028, July 2021, open access (last retrieved on 3-Aug-2021);
- M. Serbanescu, **V. M. Placinta**, F. Nastase, G. Pristavu, O. Buiu and G. Brezeanu, *A Standalone System for Resistive Smart Sensors Based on a Wheatstone Quarter-Bridge*, **Romanian Journal of Information Science and Technology**, vol. 24, nr. 2, June 2021, open access (last retrieved on

3-Aug-2021);

- M. Serbanescu, **V. M. Placinta**, O. Buiu, G. Pristavu, F. Nastase and B. Serban, *Smart-Sensing Interface for Chemo-Resistive Sensor Board Based on a Wheatstone Quarter-Bridge*, **in Proceedings of 2020 International Semiconductor Conference (CAS)**, Sinaia, Romania, Oct. 2020, DOI (last retrieved on 3-Aug-2021);
- C. Ravariu, D. E. Mihaiescu, A. Morosan and **V. M. Placinta**, *New steps for advancing the Nothing On Insulator Triode 3nm gap and preliminary expanded technology*, **Romanian Journal of Information Science and Technology**, vol. 23, no. 2, 2020, , open access (last retrieved on 3-Aug-2021);
- Ravariu, C. Parvulescu, and **V. M. Placinta**, *Technology and Optimizations for the NOI-Nano-Triode*, **in Proceedings of 2019 International Semiconductor Conference (CAS),** Sinaia, Romania, Oct. 2019, pp. 75–78, DOI (last retrieved on 3-Aug-2021);
- **V. M. Placinta**, L. N. Cojocariu and C. Ravariu, *Proton-induced radiation effects in the I/O blocks of an SRAM-based FPGA*, **Journal of Instrumentation**, JINST 14 T10001, October 2019, open access (last retrieved on 3-Aug-2021);
- **V. M. Placinta**, F. Babarada, C. Ravariu and L. G. Alecu, *Digitally Controlled Electronic Load for Testing Power Supplies Reliability*, **Revue roumaine des sciences techniques**, June 2019, open access (last retrieved on 16-Dec-2019);
- L. N. Cojocariu and **V. M. Placinta**, *Ion Beam Irradiation Effects in KINTEX-7 FPGA Resources*, **Romanian Journal of Physics**, 64. 901 (2019), open access (last retrieved on 16-Dec-2019);
- **V. M. Placinta**, L. N. Cojocariu and C. Ravariu, *I/O Blocks Reliability for an SRAM-Based FPGA When Exposed to Ionizing Radiation*, **in Proceedings of International Semiconductor Conference (CAS 2018)**, October 2018, DOI;
- **V. M. Placinta** and L. N. Cojocariu, *Radiation Hardness Studies and Evaluation of SRAM-Based FPGAs for High Energy Physics Experiments*, **in Proceedings of Topical Workshop on Electronics for Particle Physics 2017**, 085, March 2018, open access (last retrieved on 16-Dec-2019);
- **V. M. Placinta**, L. N. Cojocariu and C. Ravariu, *Evaluating the Switching Mode Power Supplies Used in Radiation Hardness Tests of Integrated Circuits*, **in Proceedings of International Semiconductor Conference (CAS 2017)**, October 2017, DOI;
- M. C. Serbanescu, **V. M. Placinta**, O. E. Hutanu and C. Ravariu, *Smart, low power, wearable multi-sensor data acquisition system for environmental monitoring*, **in Proceedings of the 10th International Symposium on ADVANCED TOPICS IN ELECTRICAL ENGINEERING**, February 2017, DOI;
- **V. M. Placinta**, L. N. Cojocariu and C. Ravariu, *Test Bench Design for radiation tolerance of two ASICS*, **Romanian Journal of Physics**, vol 5-6, 62, 903, February 2017, open access (last retrieved on 16-Dec-2019);
- L. N. Cojocariu, **V. M. Placinta** and L. Dumitru, *Monitoring system for testing the radiation hardness of a KINTEX-7 FPGA*, **AIP Conference Proceedings**, 1722, 140009, March 2016, DOI;
- L. D. Milici, **V. M. Placinta**, L. Bujor, M. R. Milici, *System for highlighting the emotional states, used in assessing the teaching methods*, **9th International IEEE Symposium on Advanced Topics in Electrical Engineering (ATEE) Conference Proceedings**, pp. 965-968, DOI.

Within the LHCb Collaboration:

As member of the LHCb Collaboration and with my PhD thesis focused mostly on the LHCb applications, I am co-author along with other researchers on over 250 high impact papers. The complete list can be found here: click here.