

## PERSONAL INFORMATION

**Mihai Cuciuc**

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Sex M | Date of birth 18/08/1985 | Nationality Romanian

## POSITION

**Research Scientist (CS III)**

## WORK EXPERIENCE

11/2015 - Present  
ongoing

**Research Scientist (CS III)**

IFIN-HH / ELI-NP

- Detector simulations;
- Data acquisition development (software & FPGA firmware);
- Continuous professional growth in ELI-NP relevant fields;
- Interviewing job candidates.

Business or sector Research

12/2014 - 11/2015  
11 months

**Sr. Applications Engineer**

Microchip Technology

- Firmware development for 8 bit microcontrollers: software stack for a long-range wireless protocol (LoRaWAN), architecture design, low power system, low level peripheral drivers, radio drivers;
- Training new team members in my areas of expertise: firmware development, the LoRaWAN protocol, a wired lighting protocol (DALI), radio communications basics;
- Deployment and maintenance of various third-party solutions for LoRaWAN network infrastructure (mostly embedded Linux devices with special hardware);
- Technical lead of a team of three engineers (including myself);
- Interviewing job candidates.

Business or sector Engineering

07/2013 - 12/2014  
1 year and 5 months

**Applications Engineer**

Microchip Technology

- Firmware development for 8 bit microcontrollers: software stack for a wired lighting protocol - Digital Addressable Lighting Interface (DALI), firmware for a USB to DALI Interface;
- PC application development: GUI for debugging and development of DALI hardware, using the USB to DALI Interface. Developed architecture for flexibility and used it to implement a suite of industry-standard tests on DALI control gear;
- Writing documentation: User's guides and application notes for different components of the DALI project;
- Designed a custom colour temperature LED lamp to simulate an incandescent bulb and wrote an application note describing the system;

Business or sector Engineering

01/2013 - 07/2013  
6 months

**Research Scientist (CS)**

IFIN-HH

- Aided in the design of an FPGA-based detector read-out system aimed at high-energy physics experiments;
- Maintenance of software tools developed for the ATLAS collaboration at CERN;

Business or sector Research

01/2013 - 07/2013  
6 months

### FPGA Design

Freelancer

- Took some small freelancing projects requiring FPGA design, ranging from simple I/O games to digital filter designs. Completed all projects with excellent feedback.

Business or sector Engineering

06/2010 - 08/2011  
1 year and 1 month

### Research Assistant

Institute of Atomic Physics (IFA)

- Took part in the ESFRO project, aiming at evaluating the research potential in Romania and developing the strategy for international collaborations;
- Developed software applications for parsing large sets of lists and text and inserting these into databases;
- Used a MySQL database for storage, together with a web-based front end for presenting summaries and plots of the analysed data.

Business or sector Research

09/2009 - 12/2012  
3 years and 3 months

### Research Assistant

IFIN-HH

- Assisting the setup and maintenance of detector systems, data acquisition and data analysis software development, supervisory control and data acquisition hardware&software development;
- Research on reconstruction algorithms for the mass of the top quark using a custom software platform for simulation and analysis of data;
- Data analysis using a dedicated framework, long-term monitoring of digital errors within the ATLAS experiment at CERN.

Business or sector Research

09/2007 - 09/2009  
2 years

### Technician

IFIN-HH

- Assisting the setup and maintenance of detector systems, data acquisition and data analysis software development, supervisory control and data acquisition hardware&software development.

Business or sector Research

## EDUCATION AND TRAINING

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2009 - 2012

### Ph.D. in Physics

University of Bucharest - Physics Doctoral School, Bucharest

- Studied reconstruction algorithms for the mass of the top quark;
- Developed software tools for long-term monitoring of subdetectors within the ATLAS collaboration at CERN.

2004 - 2009

### Engineer

University of Bucharest - Faculty of Physics, Bucharest

- Studied physics with a focus on computer science.

PERSONAL SKILLS

Mother tongue Romanian

Other language(s)

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

Levels: A1/2: Basic user - B1/2: Independent user - C1/2 Proficient user  
Common European Framework of Reference for Languages

Communication skills

Good presentation skills developed during my employment as many results needed sharing with the team. Certain areas of my work also required training colleagues or clients on the specifics of our products.

Job-related skills

High Energy Physics simulations:

- Detector simulations: Geant4, Delphes;
- Parton interactions: PYTHIA6, PYTHIA8, POWHEG.

Software Development:

- Programming: C(advanced), C++(intermediate), LabVIEW(advanced), Assembler-AVR(advanced), Assembler-MCS51(intermediate), Assembler-x86(beginner), Assembler-PIC(beginner), PVSS II / WinCC OA (intermediate);
- Hardware Description Languages: VHDL(intermediate), Verilog(beginner);
- Scripting: Python(intermediate), Bash(beginner), PHP(beginner);
- Database management systems: MySQL(intermediate).

Hardware:

- Microcontroller-based system development;
- FPGA-based system development;
- System debugging using standard laboratory equipment (oscilloscope, logic analyser, spectrum analyser);
- Familiarity with data acquisition hardware (NIM/CAMAC/VME modules) as well as instrument control buses (GPIB/RS-232).

Radio Frequency:

- Ham radio operator, callsign YO3IZN;
- Basic user of Software Defined Radio systems.

Computer skills

Operating systems:

- Windows(advanced);
- Linux(intermediate).

Others

- Working knowledge of MS Office tools (Excel / PowerPoint / Publisher / Word).

Driving licence

- Cat. A

## ADDITIONAL INFORMATION

## Publications

"Adjustable Color Temperature Lighting" (Microchip Application Note AN1889)  
<http://ww1.microchip.com/downloads/en/AppNotes/00001889A.pdf>

"RGBW Color Mixing DALI Control Gear" (Microchip Application Note AN1857)  
<http://ww1.microchip.com/downloads/en/AppNotes/00001857A.pdf>

"Building and testing an infrastructure for studying proton-proton collisions at TeV scale"  
Authors: M. Cuciuc, M. Ciubancan, V. Tudorache, A. Tudorache, R. Paun, G. Stoicea, C. Alexa  
[http://www.rpp.infm.ro/2013\\_65\\_1/art09Cuciuc.pdf](http://www.rpp.infm.ro/2013_65_1/art09Cuciuc.pdf)

"Initial and final state radiation studies for top quark mass reconstruction in dileptonic channel for  $\sqrt{s} = 7$  TeV P-P collisions"  
Authors: Valentina Tudorache, Mihai Cuciuc  
[http://www.rpp.infm.ro/2012\\_64\\_4/art04Tudorache-bunfinal.pdf](http://www.rpp.infm.ro/2012_64_4/art04Tudorache-bunfinal.pdf)

## Presentations/posters at conferences

"IEEE Nuclear Science Symposium 2018", Sydney, Australia, 2018.11.10 - 2018.11.17  
Presented the poster "Suitability of the Raspberry Pi camera for cosmic ray detection and measurement", authored by Mihai Cuciuc.

"Nuclear Photonics 2018", Brasov, Romania, 2018.06.24 - 2018.06.29  
Presented "Measuring energy and polarization of gamma rays at ELI-NP with the Gamma Polari-Calorimeter" poster authored by Mihai Cuciuc, Stefan Ataman, Loris D'Alessi, Kensuke Homma, Toseo Moritaka, Yoshihide Nakamiya, Madalin Rosu, Keita Seto and Ovidiu Tesileanu.

"IEEE Nuclear Science Symposium 2017", Atlanta, Georgia, USA, 2017.10.21 - 2017.10.28  
Presented the poster "Gamma Polari-Calorimeter: Performing simultaneous polarization and energy measurements of gamma rays using the pair production process", authored by Mihai Cuciuc, Stefan Ataman, Loris D'Alessi, Kensuke Homma, Toseo Moritaka, Yoshihide Nakamiya, Madalin Rosu, Keita Seto and Ovidiu Tesileanu.

"Light driven Nuclear-Particle physics and Cosmology 2017", Pacifico-Yokohama, Japan, 2017.04.19 - 2017.04.21  
Presented a talk titled "Gamma Polari-Calorimeter: an instrument for gamma ray polarimetry using the pair production process", authored by Mihai Cuciuc, Stefan Ataman, Loris D'Alessi, Kensuke Homma, Toseo Moritaka, Yoshihide Nakamiya, Madalin Rosu, Keita Seto and Ovidiu Tesileanu.

"The 8th International Conference on Security for Information Technology and Communications, 11-12 June 2015, Bucharest, Romania"  
Gave a talk with the title "Evaluation of Lightweight Block Ciphers for Embedded Systems", authored by Oana Barahian, Mihai Cuciuc, Lucian Petcana, Catalin Leordeanu, Valentin Cristea.

"IEEE Nuclear Science Symposium 2012", Anaheim, California, USA, 2012.10.29 - 2012.11.03  
Presented the poster "Monitoring Tool for Digital Errors in the ATLAS Tile Calorimeter Readout", authored by Mihai Cuciuc.

"Physics at LHC 2012", Vancouver, BC, Canada, 2012.06.04 - 2012.06.09  
Presented the poster "The ATLAS Tile Calorimeter performance at LHC", authored by Mihai Cuciuc on behalf of the ATLAS Collaboration.

"R-ECFA, European Committee for Future Accelerators", Bucharest, Romania, 2011.07.15  
Gave a talk titled "Student's point of view", authored by Mihai Cuciuc.

"1st International Workshop on Intelligent Security Systems (IntelliSec 2009)", Bucharest, Romania, November 11 - 14, 2009  
Participated with a talk titled "GPS Surveillance System", authored by Mihai Cuciuc and Radu Malliu.

**Lectures presented** Developed lab material and held the "Computer Programming" lab sessions in English within the Faculty of Physics, University of Bucharest. The lab is compulsory for some of the freshmen, had a duration of one semester and aimed at teaching C++ at a beginner level with a strong focus on solving physics problems. Labs were held in 2016 and again in 2017.

Developed and presented the "Embedded systems applications" optional lecture at the University Politehnica of Bucharest within the EAP InGeAR framework during November and December 2014, and again in 2015. The class aimed at providing a crash course into microcontroller programming for freshmen and consisted of 7 lectures and 20 practical labs.

Held a 4-hour training titled "Communication Protocols for Lighting", authored by Mihai Cuciuc and Michael Pearce at the "Microchip MASTERS 2014" conference in Phoenix, Arizona, USA.

Prepared and presented a 2-hour training on Radio Frequency Communications for embedded software engineers within Microchip, covering RF basics, modulation types, methods for spread-spectrum transmissions, RF measurements as well as some particularities of the Semtech LoRa modulation. A practical example using Software Defined Radio systems was also included in the presentation.

**Training courses attended** "Laser Architecture" training course at ELI-Beamlines in June 2018.

"Radioprotection on using particle accelerators and radioactive sources" course at IFIN-HH in February 2016.

"Joint PVSS-JCOP Framework" course at CERN in July 2012.

"CERN European School of High Energy Physics" in 2010.  
<http://physicschool.web.cern.ch/PhysicSchool/ESHEP/ESHEP2010/default.html>

"International School Of Trigger and Data Acquisition" in 2010.  
<http://isotdaq.web.cern.ch/isotdaq/isotdaq/2010.html>

"CERN School of Computing" in 2008, ranking 2nd in the final examination.  
[https://csc-archive.web.cern.ch/csc-archive/2008/This\\_year\\_school/CSCLive/Examination/Results/Results.asp](https://csc-archive.web.cern.ch/csc-archive/2008/This_year_school/CSCLive/Examination/Results/Results.asp)

**Online courses attended** "Intro to Parallel Programming", Udacity

"Design News' Continuing Education Center January-June 2014 Semester (15 Hours)", obtaining a Certificate of Completion, 2014.06.23.

"Compilers", Coursera, obtaining a Statement of Accomplishment, 2014.06.11.

"Digital Systems - From Logic Gates to Processors", Coursera, obtaining a Statement of Accomplishment with distinction, 2014.05.15.

"Data Analysis and Statistical Inference", Coursera, obtaining a Statement of Accomplishment with distinction, 2014.04.29.

"Cryptography I", Coursera, obtaining a Statement of Accomplishment, 2013.11.10.

"Applied Cryptography", Udacity CS387, obtaining a Certificate of accomplishment with high distinction, 2013.02.20.

"Introduction to Theoretical Computer Science", Udacity CS313, obtaining a Certificate of accomplishment with highest distinction, 2013.01.20.

"Programming a Robotic Car", Udacity CS373, obtaining a Certificate of accomplishment with highest distinction, 2012.04.06.