

Training and Activity Curriculum

(Curriculum Formativo e dell' Attività Svolta)

Education

1986-1992 **Master Degree, Particle Physics and Nuclear Interactions**
University of Bucharest, Faculty of Physics, Magurele (Romania)

2005–2009 **PhD in Physics**
University of Bucharest, Faculty of Physics, Magurele (Romania)

Work experience

1993–1994 **Junior Research Scientist**
Joint Institute for Nuclear Research (JINR), Dubna, Russia
Activities:
-Data analysis focused on the production of Λ_c^0 and Σ_c^0 charmed baryons in EXCHARM experiment.

1994–1995 **Research Scientist Assistant**
Horia Hulubei National Institute for R&D in Physics and Nuclear Engineering (IFIN-HH), Magurele, Romania
Activities:
- Data analysis for EXCHARM and OBELIX Experiments.

1995-2000 **Research Scientist**
Horia Hulubei National Institute for R&D in Physics and Nuclear Engineering (IFIN-HH)), Magurele, Romania

My research activity was fully committed to DAΦNE Exotic Atom Research (DEAR) Experiment from Frascati National Laboratories.
Activities:

- Kaonic hydrogen cascade code;
- Design, construction and operation of DEAR Kaon Monitor (scintillator counter used to monitor the $\phi(1020)$ production at rest by counting the slow charged kaons produced by its decay). In detail I designed, participated at the assembly, testing and installation of Kaon Monitor at DAΦNE IP2. I wrote the DAQ and MC software, analyze the Kaon Monitor data (including the pre-analysis results used by DAΦNE team to check the instantaneous and integrated luminosity);
- Design, construction and operation of DEAR Slow Monitor and Control System. The system, based on National Instruments hardware and software, was used to control the DEAR cryogenic target temperature and pressure, CCD temperatures, CCD insulation vacuum, safety valve position, calibration source position. Each of the above parameters were essential for the safe and continuous operation of DEAR experiment.

2000-2002 **Associate Research Scientist** (Postdoc Fellowship)

National Institute for Nuclear Physics, Frascati National Laboratories, Frascati (Italy)

My research activity was fully committed to DAΦNE Exotic Atom Research (DEAR) Experiment from Frascati National Laboratories.

Activities:

- Upgrade and operation of DEAR Kaon Monitor;
- Pre-analysis software of DEAR CCD raw data, used later also for VIP and VIP2 experiments;
- Upgrade and operation of DEAR slow monitor and control system; a “fusion” of the system with DEAR DAQ software was realized. Moreover, Kaon Monitor pre-analysis data was correlated with fast

CCD pre-analysis thus providing a signal/background ratio used by DAFNE team for beams tuning and feedback.

2002-Present **Research Scientist 3rd degree**

Horia Hulubei National Institute for R&D in Physics and Nuclear Engineering (IFIN-HH), Magurele, Romania

Activities:

- Continuation of DEAR related activities ;
- Design, assembly and installation of VIP (VIolation of the Pauli exclusion principle) Experiment (Laboratori Nazionali del Gran Sasso) control system – mainly an upgraded control system of DEAR experiment;
- Design, construction and testing of SIDDHARTA (Silicon Drift Detector for Hadronic Atom Research by Timing Applications) Experiment prototype for High Voltage system and slow controls. The work was performed in the framework and with partial EC funding JRA10– FP6 - I3HP (HadronPhysics);
- Design, construction and operation of SIDDHARTA Kaon Detector – an evolved version of DEAR Kaon Monitor – used to monitor the DAΦNE luminosity but also to trigger (flag) the SIDDHARTA SDD raw data;
- Design, construction and operation of various SiPM based detectors prototypes in the framework of WP28- HadronPhysics2 FP7 project;
- Design of PANDA Experiment control system working on various hardware and software solutions for PANDA Controls Technical Design Report; At this point I think is worthy to mention the software development I did to interface two very used control system environments EPICS and WinCC via custom DIM server/client applications.

- Design, prototyping and pre-production of PANDA Straw Tube Tracker (STT) control system – high & low voltage, gas system control software;
- Design, construction and installation of NA62 (CERN) - Hadron Sampling Calorimeter (HASC) front-end electronics and control system. With importance for the current job application is that I have made the conceptual design for a microcontroller (MCU) based Multifunction Rack Control Unit (MRCU) device aimed to remote control and monitor various hardware devices via different communication interfaces Ethernet (SNMP), CAN-bus or custom. I wrote the MCU firmware and the MRCU high level software (DIM server & client) and the WinCC application. The MRCU was used in the period 2016-2018 to control the HASC sub-system during NA62 physics runs;
- Conceptual design and construction of a Compute Module I/O Board with 10/100 Ethernet, USB 2.0, HDMI interfaces and a Communication Mezzanine board with RS232, RS485 and CAN-BUS. I wrote the high level software to facilitate the integration of the board in the control system of different experimental setups.