PERSONAL INFORMATION

Mihail Octavian Cernăianu



30 Reactorului Street, 077125 Măgurele, Ilfov, Romania

WORK EXPERIENCE

September 2026 – present

Head of the Laser System Department (LSD)

Research area: high-power laser physics. ELI-NP, Horia Hulubei National Institute for R&D in Physics and Nuclear Engineering (IFIN-HH), Măgurele, Ilfov, Romania.

- Plan and allocate departmental staff across research and development activities.
- Coordinate the operation, maintenance and development of the High Power Laser System (HPLS).
- Allocate the available budget for HPLS operation, development and related activities.
- Initiate international scientific collaborations.

2026 – present

Research Scientist Grade II (CS II)

Research area: high-power laser plasma physics. ELI-NP, Horia Hulubei National Institute for R&D in Physics and Nuclear Engineering (IFIN-HH), Măgurele, Ilfov, Romania.

- Coordinator of the 1 PW experimental area.
- Research in laser generated plasma optics, interactions of ultra-intense structured light with matter, direct laser acceleration, particle acceleration and applications, diagnostics.
- Coordination of students.

2024 – 2026

Senior Research Engineer (IDT I)

Research area: high-power laser plasma physics. ELI-NP, Horia Hulubei National Institute for R&D in Physics and Nuclear Engineering (IFIN-HH), Măgurele, Ilfov, Romania.

- Deputy Head of the Laser Driven Experiments Department (LDED).
- Coordinator of the 1 PW experimental area.
- Research in laser-generated plasma optics, interactions of ultra-intense helical beams with matter, laser plasma physics, direct laser acceleration, ion acceleration and applications, particle diagnostics.
- Development of targetry for laser experiments.

2013 – 2024

Research Engineer

Research area: experimental physics with high-power lasers. ELI-NP, Horia Hulubei National Institute for R&D in Physics and Nuclear Engineering (IFIN-HH), Măgurele, Ilfov, Romania.

- Contributed to the implementation of ELI-NP as a member of the Laser Driven Experiments Department (LDED).
- Coordinated research, development and innovation contracts.
- Coordinated international projects.
- Responsible for the design and implementation of the 1 PW experimental area.
- Coordinated targetry development for laser experiments.
- Research and development of laser plasma optics for multi-petawatt experiments.
- Research and development of interactions involving helical beams at extreme intensities.
- Research in plasma physics, lasers, ion acceleration and applications.

Sector: Research and development

EDUCATION AND TRAINING

2009 – 2013

Doctoral degree

EQF level 8

Politehnica University of Timișoara, Faculty of Electronics and Telecommunications

- Research focus: thermoelectric modules for energy conversion.
- Design and development of an autonomous energy-harvesting system based on thermoelectricity.
- Characterisation of thermoelectric materials; thermodynamic modelling; electrothermal simulations; heat transfer.
- Power converters for energy storage with advanced feedback control loops.
- Mechanical systems and GHz radio-frequency power transfer for wireless sensor networks.
- Student laboratory activities.

2004 – 2009

Degree in Electronics

EQF level 7

Politehnica University of Timișoara, Faculty of Electronics and Telecommunications, Department of Applied Electronics

Core subjects: mathematics, physics, optoelectronics, microwave engineering and signal processing.

Specialist subjects: electromagnetic compatibility, instrumentation, integrated circuits, data acquisition and processing systems, robotics and artificial intelligence.

PERSONAL SKILLS

Mother tongue: Romanian

OTHER LANGUAGES

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	C2	C2	C1	C1	C1

Levels: A1/A2 – Basic user; B1/B2 – Independent user; C1/C2 – Proficient user.
Common European Framework of Reference for Languages (CEFR)

Communication skills

- Strong ability to work in multicultural environments, with international experience since 2013.
- Participation in more than 60 international conferences, schools and workshops, with over 60 presentations delivered.

Organisational and management skills

Lead or coordinator of 10 education, study, training and infrastructure projects, with combined allocated budgets exceeding €6.5 million.
Project Director or Project Lead for three research projects with a combined budget of €1.34 million.

- 2014–2015: IFIN-HH Project Lead for an infrastructure project to develop an automated target insertion system, in partnership with ICSI Râmnicu Vâlcea.
- 2014–2015: IFIN-HH Project Lead for a study of testing procedures for the ELI-NP BMS, in partnership with INSCC.
- 2013–2015: IFIN-HH Project Lead for a training and access project at CETAL, covering experiments and the development of targets and mirrors, in partnership with INFLPR.
- 2014–2018: Coordinator of the ELITA (ELI-TARGET) work package within the international ELITRANS project (INFRADEV-3-2015).
- 2014–2018: IFIN-HH/ELI-NP Coordinator of the HIREP (High Repetition Rate Sample Delivery) work package within the international EUCALL project (INFRADEV-4-2014-2015).
- 2021–2024: Coordinator of Work Package 4.2, Targetry, within the international IMPULSE project (871161).
- 2016–2019: Lead for the development of target systems for high-power laser experiments, including plasma mirrors and systems for target alignment and positioning at high repetition rates.
- Since 2015: Coordination and development of the 1 PW experimental area, covering mechanics, optomechanics, optics and diagnostics.
- 2024–2027: Project Director, ELI-RO_016 Delphi.
- 2024–2027: Project Lead, ELI-RO_028 Flight.
- 2025–2028: Project Director, NSF 3ROSUA GENE.

Professional and technical skills

- Research in plasma physics, including ion acceleration, direct laser acceleration, optical vortex beams and their applications.
- Multi-petawatt laser system architecture.
- Expertise in multi-petawatt beam transport systems, large-aperture optics, beam monitoring and alignment, plasma optics and diagnostics, and temporal contrast diagnostics.
- Expertise in targets, diagnostics for secondary sources generated by laser–target interactions, and control and monitoring instruments for laser experiments.
- Expertise in experimental setup design, including passive and active optics, precision mechanics, motion and control, and diagnostics.
- Knowledge of electromagnetic compatibility and the protection of electronics against electromagnetic pulses (EMP).
- Expertise in radiation protection and the design of vacuum chambers and vacuum systems.

Digital skills

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

Levels: Basic user; Independent user; Proficient user.
Digital competences self-assessment grid

- Strong knowledge of Microsoft Office, Visio and OpenOffice.
- Advanced proficiency in Linux and Windows.
- Basic knowledge of VHDL.
- Advanced proficiency in Mathematica and Optica.
- Advanced proficiency in MATLAB and Simulink; good knowledge of the MATLAB Neural Network Toolbox.
- Advanced proficiency in hydrodynamic simulations of laser–plasma interactions.
- Strong knowledge of C programming, microcontroller systems and real-time operating systems.
- Good knowledge of electronic design and simulation using Altium Designer, Cadence OrCAD, Mentor Graphics and Eagle.
- Advanced proficiency in SPICE simulation and analogue and digital circuit design.
- Advanced proficiency in LabVIEW and LabVIEW FPGA.

Other skills

- Experience with Eclipse, Subversion and Gantt.
- Measurement of oil vapour down to parts-per-billion (ppb) levels using photoionisation devices and real-time systems.

ADDITIONAL INFORMATION

Publications Google Scholar publications profile