

PERSONAL INFORMATION **Alexandru MAGUREANU**



📍 Extreme Light Infrastructure - Nuclear Physics (ELI-NP),
Horia Hulubei National Institute for R&D in Physics and
Nuclear Engineering (IFIN-HH)

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Sex Male | Date of birth 09/08/1996 | Nationality Romanian

WORK
EXPERIENCE

April 2020 - Present

Physicist – Doctoral Research Assistant

Horia Hulubei National Institute for R&D in Physics and Nuclear Engineering (IFIN-HH), ELI-NP, Laser Driven Experiment Department (LDED), *Magurele, Romania*

- High Power Laser Experiments
- Business or sector** Research and Development (R&D)

October 2016 - 2020

Research Assistant

Microelectronica S.A., R&D department, Bucharest, Romania

- Metrology, Microscopy, Computer Tomography Service
- **Collaboration:**
- 2017- 2019 **ILL Institut Laue Langevin - Microelectronica S.A** Partnership
Neutron scattering analysis for OHB bipod used in cosmic flights on SALSA instrument
Rays for Space Project
- 2017- 2019 **ESA -European Space Agency - Microelectronica S.A** Partnership
X-ray non-destructive investigation methods for space -study for a GSTP Application
- 2017- 2018 **ASM Europe - Microelectronica S.A** Partnership
Full semiconductor assembly line - training
- 2017 **CERN Geneva - Microelectronica S.A** Partnership
CT scans for different samples

Business or sector Research and Development (R&D)

2018 - 2019

Physics Professor

"Grigore Moisil" National College, Bucharest, Romania

Business or sector Education

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EDUCATION
AND TRAINING

- 2020-Present
- PhD Student**
National University of Science and Technology POLITEHNICA Bucharest-Engineering and Applications of Lasers and Accelerators Doctoral School (SDIALA)
- PhD Thesis: Development of Solid Targets for Femtosecond Laser driven particle and radiation sources
- 2018-2020
- Master in Science**
University of Bucharest - Faculty of Physics
- MSc – Physics of Advanced Materials and Nanostructures
 - Master degree: Investigation of defects induced in HFO₂ thin films by Femtosecond Laser Irradiation at fluences below Laser Induced Damaged Threshold
- 2015-2018
- Bachelor in Science**
University of Bucharest - Faculty of Physics
- BS – Medical Physics
 - Bachelor degree: Morphological Treatment on Titanium Surface for Bioactivity Investigation`
- April 2016
- Erasmus +**
ELBYSIER (Electronics Beyond Silicon Era) Spring School, Sinaia, Romania
- Intensive program in Organic Electronics.
- 2011 - 2015
- High School**
Saint Sava National College, Bucharest, Romania.
- Program: Mathematics and Computer Science
- Summer Schools and Trainings**
- Septemberr 2023
- Summer School**
5th Laser-Plasmas Summer School – LaPlaSS, Salamanca, ES.
- Theme: High-Intensity laser-plasma processes and related application
- August 2023
- Summer School**
EuroSchool on Exotic Beams 2023, Sibiu, RO .
- Theme: Physics of exotic nuclei, with a focus on high-power laser beams and their applications
 - Poster+ presentation: Development of structured targets for increased efficiency of target normal sheath acceleration of protons
- August 2022
- Training**
CLF Training Weeks for High Power Laser experiments, (CLF-RAL), Didcot, UK.
- Theme: High power laser experimental set-up, optical alignment techniques, laser and plasma diagnostics, vacuum and drive system operation, target fabrication and general safety.
 - Project: Accelerating protons from an Au foil with the Vulcan Laser

July 2022

Summer School

Plasmas in Super-Intense Laser Fields, Erice, Sicily , Italy.

- Theme: Laser-produced plasmas, laser-driven sources of particles and radiation physics of inertial confinement fusion.
- Poster: "Plasma imaging diagnostics for high power lasers experiments"

August 2021

Summer School

Carpathian Summer School of Physics, Sinaia, RO

- Theme: Exotic Nuclei and Nuclear/Particle Astrophysics. Physics with small accelerators
- Presentation: "Targets used in laser-driven proton acceleration based on TNSA mechanism"

July 2017

Summer School

Joint Institute for Nuclear Research (JINR), Dubna, Russia.

- Intensive program in Laboratory of Radiation Biology
- Project: Analysis of high-Let radiation- induced HPRT mutation

PERSONAL SKILLS

Mother tongue(s) Romanian

Other language(s)

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	C1	C1	C1	C1	C1
French	B2	B2	B1	B1	B1
Replace with name of language certificate. Enter level if known.					

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

Communication skills

- Excelent communication skills gained through numerous scientific presentations and a Public Speaking Course

Organisational / managerial skills

- Project Manager for a Music Festival (2014)

Job-related skills

- Competences in High power Lasers experiments with solid / gaseous Targets
- Experientially Skills:
 - Plasma imaging diagnostics for high power laser experiments:
 - Shadowgraphy Techniques
 - Wave front sensor measurements
 - Interferometry measurements for plasma density diagnostic
 - Deposition techniques: PLD Pulsed Laser Deposition, RF Magnetron Sputtering, Spin Coating
 - Characterization techniques: SEM, XRD, XRR, Electrical Measurements: 2/4 Samples, Optical Measurements (Spectrophotometer)

Digital competence

- ECDL CORE
- Basic: C++, Mathematica, MPLAB X, Siesta
- Intermediate: MATLAB, Python
- Advanced: ImageJ, Origin,

Driving license Driving license category B

Conferences and Publications

Publications :

1. **A. Măgureanu**, Dincă L, Jalbă C, Andrei RF, Burducea I, Ghiță DG, Nastasa V, Gugiu M, Asavei T, Budrigă O, Ticoș D, Crăciun V, Diaconescu B and C.M. Ticoș Target Characteristics Used in Laser-Plasma Acceleration of Protons Based on the TNSA Mechanism, *Frontiers in Physics* 10, 727718 (2022) doi: 10.3389/fphy.2022.727718
2. **A. Măgureanu**, S. Bălășcuță, P. Ghenuche, M.O. Cernaianu, L Tudor, V Nastasa, D.G. Ghiță, B. Diaconescu, D. Doria, C.M. Ticoș, Image-based diagnostics of the plasma produced in 1 PW laser experiments, *Romanian Reports in Physics*, Vol. 77, Issue 4, 2025
3. **A. Magureanu**, A. Zubarev, G. Dorcioman, P. Garoi, G. Bleotu, S. A. Irimiciuc, R. Udrea, D. Ursescu, V. Craciun, and C. M. Ticos, "Development of ultralow density double layer targets for laser-plasma interaction", *Proc. SPIE 13535, Research Using Extreme Light Infrastructures: New Frontiers with Petawatt-Level Lasers VI*, 135350C (5 June 2025); <https://doi.org/10.1117/12.3056400>
4. S. C. Ionescu, C. C. Gheorghiu, V. Lupu, M.-I. Zai, **A. Magureanu**, D. B. Dreghici, A. McCay, D. Molloy, H. Ahmed, M. Borghesi, D. Popa, M. O. Cernaianu, D. Doria, K. A. Tanaka, V. Leca, "Highly ordered vertical nickel nanotubes and nanowires on thin substrate for high power lasers experiments", *Discover Nano*, Vol. 20, 219, 2025
5. M.O Cernaianu, P Ghenuche, F Rotaru, L Tudor, O Chalus, C Gheorghiu, DC Popescu, M Gugiu, S Balascuta, **A Magureanu**, M Tataru, V Horny, B Corobean, I Dancus, A Alincutei, T Asavei, B Diaconescu, L Dinca, DB Dreghici, DG Ghita, C Jalba, V Leca, AM Lupu, V Nastasa, F Negoita, M Patrascoiu, F Schimbeschi, D Stutman, C Ticos, D Ursescu, A Arefiev, P Tomassini, V Malka, S Gales, KA Tanaka, CA Ur, D Doria, "Commissioning of the 1 PW experimental area at ELI-NP using a short focal length parabolic mirror for proton acceleration", *Matter and Radiation at Extremes*, Vol. 10, 027204 (2025)
6. D. Nistor, **A. Măgureanu**, C. M. Ticos, A geometrical model for plasma mirror alignment in high-power laser experiments, *U.P.B. Sci. Bull., Series A*, Vol. 87, Iss. 2, 127-138 (2025), ISSN 1223-7027
7. C. Jalbă, L. Dincă, N. Djourellov, C. Ticoș, **A. Măgureanu**, B. Diaconescu; The importance of chemical shift screening of the precursors for increasing the exfoliation efficiency of the graphite layers, *U.P.B. Sci. Bull., Series A*, Vol. 85, Iss. 3, 131-144, (2023)
8. K. M. Spohr, D. Doria, D. B. Dreghici, **A. Magureanu**, V. Nastasa, L. Tudor, C.-J. Yang, Theoretical evaluation to assist targeted drug delivery with ultrasound-supported sonoporation for future laser-driven studies at ELI-NP, *Romanian Reports in Physics*, Vol 75, 601 (2023).
9. K. A. Tanaka, S. Gales, C. A. Ur, C. Ivan, I. Dancus, C. Matei, D. Doria, D. Balabanski, O. Tesileanu, T. Asavei, S. Balascuta, A. Berceanu, M. Cernaianu, C. Chiochiu, M. Cuciuc, B. Diaconescu, P. Ghenuche, D. Ghita, M. Gugiu, **A. Magureanu**, I. Mitu, Y. Nakamiya, V. Nastasa, L. Neagu, F. Negoita, J. Ong, V. Rodrigues, M. Rosu, N. Safca, D. Sangwan, K. Seto, K. Spohr, D. Stutman, M. Talposi, C. Ticos, P. Tomassini, L. Tudor, D. Ursescu, K. Homma, Current Status of ELI-NP (Romania). *Review of Laser Engineering*, 51, 5, pp 299-307 (2023), doi:10.2184/laj.51.5_299 (In Japanese)

Conferences :

1. Development of ultra-low density double layer targets for laser-plasma interaction, **A. Măgureanu**, A. Zubarev G. Dorcioman, P. Garoi, G. Bleotu, S.A. Irimiciuc, R. Udrea, D. Ursescu, V. Craciun, C.M Ticos, *SPIE Optics & Optoelectronics*, Prague, April 2025

2. Fabrication of ultra-low-density carbon targets to enhance laser–plasma coupling **A. Măgureanu**, S.A. Irimiciuc, R. Udrea, A. Zubarev, P-G. Bleotu, G. Dorcioman, P. Garoi, D. Ursescu, C.M Ticos, V. Craciun, EMRS 2025
3. Development of double layer targets with ultra low density carbon for laser plasma interaction optimization **A. Măgureanu**, G. Dorcioman, P. Garoi, G. Bleotu, S.A. Irimiciuc, R. Udrea, D. Ursescu, V. Craciun, C.M Ticos, EMRS Spring Meeting, Strasbourg, France, 27-31 May 2024
4. Imaging diagnostics for laser plasma accelerators, **A. Măgureanu**, S. Bălășcuță, P. Ghenuche, M.O. Cernăianu, A-M. Lupu, B. Diaconescu, C. M. Ticoș, D. Doria, 14th European Conference on Accelerators in Applied Research and Technology, Sibiu, Romania, July 17-23, 2023
5. Development of low-density structured targets for enhanced laser-driven proton acceleration, **A. Măgureanu**, V. Nastasa, D.B. Dregheci, A. McCay, D. Molloy, G. Dorcioman, P. Garoi, V. Craciun, L. Tudor, L. Romagnani, H.Ahmed, M.O. Cernaianu, D. Doria. C.M Ticos, 2023 Christmas Meeting of the CLF High Power Laser Science Community, Abingdon, UK, December 2023
6. Development of structured targets for increased efficiency of target normal sheath acceleration of protons, **A. Măgureanu**, G. Dorcioman, P. Garoi, G. Bleotu, S.A. Irimiciuc, R. Udrea, D. Ursescu, V. Craciun, C.M Ticos, EuroSchool on Exotic Beams 2023, Poster + Short Presentation
7. Plasma imaging diagnostics for high power lasers experiments, **A. Măgureanu**, S. Bălășcuță, P. Ghenuche, M. O. Cernăianu, A-M. Lupu, B. Diaconescu, C. M. Ticoș, D. Doria, 2022 Christmas Meeting of the CLF High Power Laser Science Community, Abingdon, UK, December 2022
8. Target characteristics used in laser-plasma acceleration of protons based on the TNSA mechanism, **A. Măgureanu**, C. M. Ticoș, 48th European Conference on Plasma Physics (EPS), Poster, 2022
9. Plasma imaging diagnostics for high power lasers experiments, **A. Măgureanu**, S. Bălășcuță, P. Ghenuche, M. O. Cernăianu, A-M. Lupu, B. Diaconescu, C. M. Ticoș, D. Doria, The International Conference on Laser, Plasma and Radiation - Science and Technology (ICLPR-ST), 2022 Poster, – Awarded with Best Presentation Award, 2nd Prize
10. Spectroscopic evidence for the significant role of optical field ionization in the interaction of 10 PW laser pulses with high-Z materials Y. Fukuda, S.N. Ryazantsev, T.A. Pikuz, Ko. Kondo, S.A. Pikuz, K.A. Tanaka, P. Ghenuche, T. Asavei, M. Cernaianu, M. Gugiu, V. Horný, **A. Magureanu**, V. Nastasa, P. Tomassini, L. Tudor, D. Doria, 50th EPS Conference on Plasma Physics, Salamanca, Spain, 2024
11. A liquid crystal plasma mirror "fuse" for petawatt-class lasers to protect against back reflections, G. Tiscareno, N. Czaplá, D. W. Schumacher, M. O. Cernaianu, F. Rotaru, P. V. Ghenuche, T. Asavei, S. Balascuta, **A. Măgureanu**, V. Nastasa, F. Negoita, P. Tomassini, L. Tudor, K. A. Tanaka, C. A. Ur, D. Doria, 64th Annual Meeting of the APS Division of Plasma Physics, October 17–21, 2022; Spokane, Washington, 2022, Oral Presentation